Curriculum Vitae – John Randall Flanagan

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Contact Information

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Education

Ph.D.	McGill University, Psychology	1992
M.A.	McGill University, Physical Education	1986
B.P.E.	University of Alberta, Physical Education	1983

Positions

- Professor, Departments of Psychology and Biomedical & Molecular Sciences, Queen's University, Promoted July 2006.
- Visiting Professor, Department of Integrative Medical Biology, Umeå University, Appointed July 2001.
- Associate Professor, Departments of Psychology and Biomedical & Molecular Sciences, Queen's University, Promoted July 2000.
- Assistant Professor, Department of Physiology, Queen's University, Appointed July 1998.
- Assistant Professor, Department of Biomedical & Molecular Sciences, Queen's University, Appointed January 1995.
- Assistant Professor, Department of Movement Sciences and Education, Teachers College, Columbia University, Appointed January 1994.

Fellowships and Visitorships

- Senior Visiting Scientist, Institute of Neurology, University College London, December 2000 to May 2001.
- NSERC Postdoctoral Fellow, MRC Applied Psychology Unit, Cambridge, UK and Department of Anatomy, University of Cambridge, Jan 1992 to Jan 1994.

Metrics

From Google Scholar

Citation indices	All	Since 2017
Citations	22195	7081
h-index	67	40

Funding

Current Funding

Natural Sciences and Engineering Research Council of Canada Operating Grant: "Planning and control of object manipulation tasks". Flanagan (PI). \$480,000: 2019-2025.

Previous Funding

- Canadian Institutes of Health Research Operating Grant: "The role of episodic, declarative, and spatial memory systems in the planning and control of real world action tasks". Flanagan (PI), Gallivan. \$750,000: 2018-2023.
- Natural Sciences and Engineering Research Council of Canada Operating Grant: "Decisionmaking in action planning and control". Flanagan (PI). \$285,000: 2014-2019.
- Natural Sciences and Engineering Research Council of Canada Equipment Grant: "Human functional neuroimaging stimulus presentation and data collection system for studies of action, perception and decision-making". Gallivan (PI), Flanagan, Tusche, Wammes, Castelhano. \$150,000: 2019-20.
- Canadian Institutes of Health Research Operating Grant: "Neural representations underlying the planning and control of object manipulation tasks". Flanagan (PI), Gallivan, Johnsrude. \$698,430: 2013-2018.
- Canadian Foundation for Innovation Leading Edge Fund: "Enhancement and development of new assessment tools for evaluation of brain function and dysfunction". Munoz (PI), De Felice, Flanagan, Itti, Johnsrude, Reynolds, Scott, Troje. \$1,768,662: 2013-2018.
- Natural Sciences and Engineering Research Council of Canada Equipment Grant: "Robotic device for studies of human movement perception and control". Flanagan (PI), Gallivan, Blohm, Poppenk, Troje. \$150,000: 2016-17.
- PICS (France) Collaborative Travel Grant. "Motor learning in object manipulation tasks." Danion, Flanagan (co-applicants), €21,000, 2014-2017.
- Canadian Institutes of Health Research Operating Grant: "Sensorimotor control processes underlying object manipulation tasks". Flanagan (PI). \$711,015: 2012-2017.
- Royal Society (UK) Collaborative Travel Grant. "Neural bases of sensorimotor control of object grasping and manipulation." Davare, Flanagan (co-applicants), £24,000, 2014-2016.
- Ontario Research Fund for Excellence Funding Round 4: "Quantifying sensorimotor function and dysfunction". Scott (PI), Black, Blohm, Flanagan, Glasgow, McIlroy, Munoz. \$2,900,000: 2010-2015.
- Natural Sciences and Engineering Research Council of Canada CREATE: "Computational approaches in neuroscience action control and transformations". Goodale (PI), Blohm, Flanagan, Munoz, Scott, Corneil, Culham, Crawford, Henriques, Jenkin, Stuerzlinger (co-PIs). \$3,000,000: 2009-2014.
- Natural Sciences and Engineering Research Council of Canada Operating Grant: "Representing object weight in action and perception". Flanagan (PI). \$225,000: 2009-2014.
- Natural Sciences and Engineering Research Council of Canada Equipment Grant: "Robotic device for studies of human movement control". Flanagan (PI). \$140,353: 2011-12.

- Canadian Foundation for Innovation and Ontario Innovation Trust, Leading Edge Fund: "Development of new assessment tools for evaluation of brain function and dysfunction". Munoz (Lead), Flanagan, Glasgow, Johansson, Johnsrude, Munhall, Scott, Stroman, Theeuwes, Wolpert (co-PIs). \$14,000,000: 2007-2012.
- Canadian Institutes of Health Research Operating Grant: "Sensorimotor control processes underlying object manipulation". Flanagan (PI). \$554,400: 2007-2012.
- Canadian Institutes of Health Research Resource Grant: "Peripheral equipment and maintenance of facility for functional magnetic resonance imaging in humans and non-human primates". Munoz, Stroman (PIs). \$428,052: 2006-2011.
- Canadian Institutes of Health Research Group Grant: "Sensory motor integration: from reflexes to social interactions". Dorris, Flanagan, Munoz, Paré, Rose, Scott (co-PIs). \$1,891,750: 2005-2010.
- Natural Sciences and Engineering Research Council of Canada Operating Grant: "Prediction and control in motor learning and performance". Flanagan (PI). \$150,000: 2004-2009.
- Human Frontier Science Program Research Grant: "Controlling the statistics of action: noise and uncertainty in sensorimotor control". Flanagan (PI), Kitazawa, Shadmehr, Wolpert. US \$1,350,000: 2003-2006.
- Canadian Institutes of Health Research Operating Grant: "Eye-hand coordination in motor control and motor learning". Flanagan (PI). \$208,938: 2003-2006.
- Canadian Institutes of Health Research Group Grant: "Sensory-motor systems: studies in behaviour, dysfunction, and plasticity". Flanagan, Kawaja, Munoz, Rose, Ross, Scott (co-PIs). \$2,098,902: 2001-2005.
- Canadian Foundation for Innovation and Ontario Innovation Trust: "Parallel laboratories for Studies of eye-hand coordination in humans and non-human primates". Flanagan (PI), Munoz, Paré, Scott. \$1,110,915: 2000-2005.
- Natural Sciences and Engineering Research Council of Canada Operating Grant: "Internal models of sensorimotor transformations underlying interactions with the environment". Flanagan (PI). \$136,500: 1999-2004.
- Canadian Institutes of Health Research (CIHR) Operating Grant: "Visual guidance of hand movement in object manipulation". Flanagan (PI), Munoz, Paré. \$215,162: 2000-2003.
- Human Frontier Science Program (HFSP): "Internal models for multiple tasks in sensorimotor control". Wolpert (PI), Flanagan, Kalaska, Kawato, Kitazawa, Lemon. US \$750,000: 1999-2002.
- Natural Sciences and Engineering Research Council of Canada Major Equipment Grant: "Artificial mechanical environment for studies of human motor control". Ostry (PI), Flanagan, Levin, Munhall, Ramsay, Terzopoulos. \$200,000: 1999.
- Tourette Syndrome Association (USA): "Eye and hand coordination in Tourette syndrome." Flanagan, Munoz (co-PIs). \$56,000: 1999.
- Natural Sciences and Engineering Research Council of Canada Equipment Grant: "Internal models of sensorimotor transformations underlying interactions with the environment". Flanagan (PI). \$10,000: 1999.
- Queen's University Advisory Research Council Grant: "Sensorimotor control of multiple digit manipulation." Flanagan (PI). \$5,000: 1996.

- Natural Sciences and Engineering Research Council of Canada Operating Grant: "The organization of internal representations underlying motion planning and control." Flanagan (PI). \$79,950: 1995-1999.
- Queen's University Advisory Research Council Grant: "Adaptation in altered visuomotor environments." Flanagan (PI). \$6,500: 1995.
- Natural Sciences and Engineering Research Council of Canada Equipment Grant: "The organization of internal representations underlying motion planning and control." Flanagan (PI). \$41,445: 1995.
- National Science Foundation (USA): "Acquisition of a system of instruments for the measurement and analysis of human multi-joint movement control." Flanagan (PI), Gentile, Ghez, Weir. \$247,800: 1995.

Professional Contributions

Editorial Boards

Experimental Brain Research, 2000-Member of the Faculty of 1000 Biology, 2006-2009

Ad Hoc Journal Reviewing

Behavioural Brain Research, Brain, Brain Research, Canadian Journal of Physiology and Pharmacology, Cerebral Cortex, Current Biology, Ergonomics, European Journal of Neuroscience, eLife, Experimental Brain Research, IEEE Transactions on Robotics and Automation, Journal of Motor Behavior, Journal of Experimental Psychology: Human Perception and Performance, Journal of Physiology (London), Journal of Neurophysiology, Journal of Neuroscience, Journal of Vision, Nature, Nature Communications, Nature Human Behaviour, Nature Neuroscience, Nature Reviews Neuroscience, Perception, Perception & Psychophysics, Philosophical Transactions of the Royal Society B: Biological Sciences, Psychological Science, Psychonomic Bulletin & Review, PLoS: Biology, PNAS, Science, Spatial Vision, Quarterly Journal of Experimental Psychology

Ad Hoc Grant Reviewing

Alberta Heritage Foundation, Canadian Foundation for Innovation, Canadian Institutes of Health Research, Canadian Natural Sciences and Engineering Research Council, Human Frontiers Science Program, National Science Foundation (USA), Wellcome Trust (UK)

Grant Committees

Canadian Institutes of Health Research (CIHR) Movement & Exercise, 2006

Canadian Institutes of Health Research (CIHR) Behavioural Sciences C, 2005, 2007-2018

National Institutes of Health (NIH) Study Section IFCN5 (Integrative, Functional and Cognitive Neuroscience), 2002

Canadian Natural Sciences and Engineering Research Council RTI Committee 2020

Professional Societies

Society for Neuroscience Society for the Neural Control of Movement

Refereed Journal Publications

Trainees = $\underline{\text{Underlined}}$.

^{†‡} = Equal contributions.

Submitted / Under Revision / Preprints

- <u>de Brouwer AJ, Carter MJ, Smail LC</u>, Wolpert DM, Gallivan JP, FLANAGAN JR (Preprint) Gaze behaviour reveals flexible encoding of competing reach goals under conditions of target uncertainty. bioRxiv doi: 10.1101/2020.09.02.279414
- Standage DI, Gale DJ, Nashed JY, FLANAGAN JR, Gallivan JP (Preprint). Whole-brain modular dynamics at rest predict sensorimotor learning performance. bioRxiv doi: 10.1101/2023.12.18.572267

Publications

- Nick Q, <u>Gale DJ</u>, <u>Areshenkoff CN</u>, <u>De Brouwer AJ</u>, <u>Nashed JY</u>, Wammes J, FLANAGAN JR, Smallwood J, Gallivan JP (accepted). Reconfigurations of cortical manifold structure during reward-based motor learning. *eLIFE*
- <u>Zhu T</u>, Gallivan JP, Wolpert DM[‡], FLANAGAN JR[‡] (2023) Interaction between decisionmaking and motor learning when selecting reach targets in the presence of bias and noise **PLoS Computational Biology** 19: e1011596 https://doi.org/10.1371/journal.pcbi.1011596
- [135] <u>McGarity-Shipley MR</u>[†], <u>Markovik Jantz S</u>[†], Johansson RS, Wolpert DM, FLANAGAN JR (2023) Fast feedback responses to categorical errors that do not indicate error magnitude are optimized based on short and long term memory. **Journal of Neuroscience** 43: 8525-8535; https://doi.org/10.1523/JNEUROSCI.1990-22.2023
- Moskowitz JB, Fooken J, Castelhano MS, Gallivan JP, FLANAGAN JR (2023) Visual search for reach targets in actionable space is influenced by movement costs imposed by obstacles **Journal of Vision** https://doi.org/10.1167/jov.23.6.4
- Cesanek, Flanagan JR, Wolpert DM (2023) Memory, perceptual, and motor costs affect the strength of categorical encoding during motor learning of object properties **Scientific Reports** 13:8619 https://doi.org/10.1038/s41598-023-33515-2
- Moskowitz JB, Berger SA, Castelhano MS, Gallivan JP, FLANAGAN JR (2023) The influence of movement-related costs when searching to act and acting to search. Journal of Neurophysiology 129: 115-130
- Zhang Z, Cesanek E, Ingram JN, FLANAGAN JR[‡], Wolpert DM[‡] (2023) Object weight can be rapidly predicted, with low cognitive load, by exploiting learned associations between the weights and locations of objects. **Journal of Neurophysiology** 129:285-297
- [130] <u>Standage DI</u>, <u>Areshenkoff CN</u>, <u>Gale DJ</u>, <u>Nashed JY</u>, FLANAGAN JR, Gallivan JP (2023) Whole-brain dynamics of human sensorimotor adaptation. Cerebral Cortex 33: 4761-4778 https://doi.org/10.1093/cercor/bhac378
- <u>Gale DJ</u>, <u>Areshenkoff CN</u>, <u>Standage DP</u>, <u>Nashed JY</u>, Markello RD, FLANAGAN JR, Smallwood J, Gallivan JP (2022) Distinct patterns of cortical manifold expansion and contraction underlie human sensorimotor adaptation. **Proceedings of the National Academy of Sciences** https://doi.org/10.1073/pnas.2209960119

- Ikegami T, FLANAGAN JR[‡], Wolpert DM[‡] (2022) Reach adaption to a visuomotor gain with terminal error feedback involves reinforcement learning. **PLoS One** https://doi.org/10.1371/journal.pone.0269297
- <u>Areshenkoff CN</u>, <u>Gale DJ</u>, <u>Nashed JY</u>, <u>Standage D</u>, FLANAGAN JR, Gallivan JP (2022) Neural Excursions from Low-Dimensional Manifold Structure Explain Intersubject Variation in Human Motor Learning. **eLife** https://doi.org/10.7554/eLife.74591
- Nashed JY, Shearer KT, Wang JZ, Chen Y, Cook EE, Champagne AA, Coverdale NS, Fernandez-Ruiz J, Striver SI, Flanagan JR, Gallivan JP, Cook DJ (2022) Spontaneous Behavioural Recovery Following Stroke Relates to the Integrity of Parietal and Temporal Regions. **Translational Stroke Research** https://doi.org/10.1007/s12975-022-01115-3
- [125] Cesanek E, Zhang Z, Ingram JN, Wolpert DM[‡], FLANAGAN JR[‡] (2021) Motor memories of object dynamics are categorically organized. eLife Nov 19 doi: 10.7554/eLife.71627
- <u>de Brouwer AJ</u>, Rashid MR, FLANAGAN JR, Poppenk J, Gallivan JP (2021) Variation in errorbased and reward-based human motor learning is related and associated with entorhinal volume. **Cerebral Cortex** doi: 10.1093/cercor/bhab424
- <u>Gale DJ</u>, FLANAGAN JR, Gallivan JP (2021) Human Sensorimotor cortex is modulated during motor planning. **Journal of Neuroscience** 41: 5909-5922
- <u>de Brouwer AJ</u>, FLANAGAN JR, Spering M (2021) Functional use of eye movements for an acting system. **Trends in Cognitive Science** 25: 252-263
- <u>Gale DJ</u>, <u>Areshenkoff CN</u>, Honda CT, Johnsrude IS, FLANAGAN JR, Gallivan JP (2021) Motor planning modulates neural activity patterns in early human auditory cortex. **Cerebral Cortex** doi: 10.1093/cercor/bhaa403
- [120] Kim KS, Daliri A, FLANAGAN JR, Max L (2020) Dissociated development of speech and limb sensorimotor learning in stuttering: speech auditory-motor learning is impaired in both children and adults who stutter. Neuroscience 451: 1-21 https://doi.org/10.1016/ j.neuroscience.2020.10.014
- <u>McGarity-Shipley MR</u>, Heald JB, Ingram JN, Gallivan JP, Wolpert DM, FLANAGAN JR (2020) Motor memories in manipulation tasks are linked to contact goals between objects. **Journal of Neurophysiology** 124: 994–1004 doi:10.1152/jn.00252.2020
- Moskowitz JB, Gale DJ, Gallivan JP, Wolpert DM[†], FLANAGAN JR[†] (2020) Human decision making anticipates future performance in motor learning **PLOS Computational Biology** https://doi.org/10.1371/journal.pcbi.1007632
- Mathew J, FLANAGAN JR, Danion FR (2019) Gaze behavior during visuomotor tracking with complex hand-cursor dynamics. **Journal of Vision** 19: 24, 1-13 doi: https://doi.org/10.1167/19.14.24
- <u>Proud K</u>, Heald JB, Ingram JN, Gallivan JP, Wolpert DM, FLANAGAN JR (2019) Separate motor memories are formed when controlling different implicitly specified locations on a tool. **Journal of Neurophysiology** 121: 1342-1351
- [115] Gallivan JP, Chapman CS, <u>Gale DJ</u>, FLANAGAN JR, Culham JC (2019) Selective modulation of early visual cortical activity by movement intention. Cerebral Cortex doi:10.1093/cercor/ bhy345

- Kuling IA, <u>de Brouwer AJ</u>, Smeets JBJ, FLANAGAN JR (2019) Correcting for natural visuoproprioceptive matching errors based on reward as opposed to error feedback does not lead to higher retention. **Experimental Brain Research** doi: 10.1007/s00221-018-5456-3
- <u>de Brouwer AJ</u>, Gallivan JP, FLANAGAN JR (2018) Visuomotor feedback gains are modulated by gaze position. **Journal of Neurophysiology** 120: 2522-2531
- <u>de Brouwer AJ</u>, <u>Albaghdadi M</u>, FLANAGAN JR, Gallivan JP (2018) Using gaze behavior to parcellate the explicit and implicit contributions to visuomotor learning. **Journal of Neurophysiology** https://doi-org.proxy.queensu.ca/10.1152/jn.00113.2018
- Danion F, FLANAGAN JR (2018) Different gaze strategies during eye versus hand tracking of a moving target. Scientific Reports 8:10059 DOI DOI:10.1038/s41598-018-28434-6
- [110] Gallivan JP, Chapman CS, Wolpert DM, FLANAGAN JR (2018) Decision-making in sensorimotor control, Nature Reviews Neuroscience https://doi.org/10.1038/s41583-018-0045-9
- Heald JB, Ingram JN, FLANAGAN JR, Wolpert DM (2018) Multiple motor memories are learned to control different points on a tool. **Nature Human Behaviour** 2: 300-311
- Pruszynski JA, FLANAGAN JR, Johansson RS (2018) Fast and accurate edge orientation processing during object manipulation eLife 7:e31200 DOI: 10.7554/ELIFE.31200
- Ingram JN, Sadeghi M, FLANAGAN JR, Wolpert DM (2017) An error-tuned model for sensorimotor learning. **PLoS Computational Biology** 13(12) e1005883
- Nashed JY, Diamond JS, Gallivan JP, Wolpert DM, FLANAGAN JR (2017) Grip force when reaching with target uncertainty provides evidence for motor optimization over averaging. Scientific Reports 7: 11703 DOI: 10.1038.s41598-017-10996-6
- [105] Danion F, Mathew J, FLANAGAN JR (2017) Eye tracking of occluded self-moved targets: the role of haptic feedback and hand-target dynamics. eNeuro 4(3) e0101-17.2017 1-12
- Diamond JS, Wolpert DM[†], FLANAGAN JR[†] (2017) Rapid target foraging with reach or gaze: the hand looks further ahead than the eye. **PLoS Computational Biology** 13(7): e1005504. https://doi.org/10.1371/journal.pcbi.1005504
- <u>de Brouwer AJ</u>, Jarvis T, Gallivan JP, FLANAGAN JR (2017) Parallel specification of visuomotor feedback gains during bimanual reaching to independent goals. **eNeuro** 4(2) e0026-17.2017 1–12
- <u>Trewartha KM</u>, FLANAGAN JR (2017) Linking actions and objects: Context-specific learning of novel weight priors. **Cognition** 163: 121-127
- Gallivan JP, <u>Stewart BM</u>, <u>Baugh LA</u>, Wolpert DM, FLANAGAN JR (2017) Rapid Automatic Motor Encoding of Competing Reach Options. **Cell Reports** 18:1619-1626
- [100] <u>Baugh LA</u>, <u>Yak A</u>, Johansson RS, FLANAGAN JR (2016) Representing multiple object weights: competing priors and sensorimotor memories. **Journal of Neurophysiology** doi: 10.1152/jn.00282.2016
- <u>Trewartha KM</u>, FLANAGAN JR (2016) Distinct contributions of explicit and implicit memory processes to weight prediction when lifting objects and judging their weights: an aging study. **Journal of Neurophysiology** doi: 10.1152/jn.01051.2015

- <u>Gallivan JP, Bowman NAR</u>, Chapman CS, Wolpert DM, FLANAGAN JR (2016) The sequential encoding of competing action goals involves dynamic restructuring of motor plans in working memory. **Journal of Neurophysiology** doi:10.1152/jn.00951.2015
- <u>Gallivan JP</u>, <u>Logan L</u>, Wolpert DM, FLANAGAN JR (2016) Parallel specification of competing sensorimotor control policies for alternative action options. **Nature Neuroscience** doi:10.1038/nn.4214
- Pruszynski JA, Johansson RS, FLANAGAN JR (2016). A rapid tactile-motor reflex automatically guides the hand towards handheld objects. **Current Biology** 26: 1-5
- [95] Wolpert DM, FLANAGAN JR (2016) Computations underlying sensorimotor learning. Current Opinions in Neurobiology 37:7-11
- Diamond JS, Nashed JY, Johansson, RS, Wolpert DM, FLANAGAN JR (2015) Rapid visuomotor corrective responses during transport of hand-held objects incorporate novel object dynamics **Journal of Neuroscience** 35:10572-10580
- <u>Gallivan JP</u>, <u>Barton K</u>, Chapman CS, Wolpert DM, FLANAGAN JR (2015) Action plan cooptimization reveals the parallel encoding of competing reach movements. **Nature Communications** 6:7428 doi:10.1038/ncomms8428
- <u>Gallivan JP</u>, Johnsrude IS, FLANAGAN JR (2015) Planning ahead: object-directed action sequences decoded from human frontoparietal and occipitotemporal networks. **Cerebral Cortex** doi:10.1093/cercor/bhu302
- Hutchison RM, Culham JC, FLANAGAN JR, Everling S, <u>Gallivan JP</u> (2015). Functional subdivisions of medial parieto-occipital cortex in humans and nonhuman primates using resting-state fMRI. **NeuroImage** 116: 10-29
- [90] <u>Trewartha KM</u>, <u>Case S</u>, FLANAGAN JR (2015) Integrating actions into object location memory: A benefit for active versus passive reaching movements Behavioural Brain Research 279: 234-239
- Berniker M[†], Franklin DW[†], FLANAGAN JR[‡], Wolpert DM[‡], Kording K[‡] (2014) Motor learning of novel dynamics is not represented in a single simple coordinate system: evidence for mixed coordinate representations and local learning. **Journal of Neurophysiology** 111: 1165-1182
- Daliri A, Prokopenko RA, FLANAGAN JR, Max L (2014) Control and prediction components of movement planning in stuttering vs. nonstuttering adults. Journal of Speech, Language, and Hearing Research 57: 2131-2141
- <u>Gallivan JP</u>, Cant JS, Goodale MA, FLANAGAN JR (2014). Representation of object weight in human ventral visual cortex. **Current Biology** 24: 1866-1873
- Hutchison RM, Culham JC, Everling S, FLANAGAN JR, <u>Gallivan JP</u> (2014) Distinct and distributed functional connectivity patterns across cortex reflect the domain-specific constraints of object, face, scene, body, and tool category-selective modules in the ventral visual pathway. **NeuroImage**, 96: 216-236.
- [85] Säfström D, Johansson RS, FLANAGAN JR (2014) Gaze behavior when linking sequential action phases in a manual task. **Journal of Vision** 14: 3, 1-15
- Stewart BM[†], Gallivan JP[†], Baugh LA, FLANAGAN JR (2014) Motor, not visual, encoding of potential reach targets. Current Biology 24 (19): R953-4

- <u>Trewartha KM</u>, Garcia A, Wolpert DM, FLANAGAN JR (2014) Fast but fleeting: adaptive motor learning processes associated with aging and cognitive decline. **Journal of Neuroscience** 34: 13411-13421
- <u>Armstrong IT</u>, Judson M, Munoz DP, Johansson RS, FLANAGAN JR (2013) Waiting for a hand: saccadic reaction time increases in proportion to hand reaction time when reaching under a visuomotor reversal. Frontiers in Human Neuroscience 7, article 319 (11 pages)
- Danion F[†], <u>Diamond JS</u>[†], FLANAGAN JR (2013)^[1]_{SEP}Separate contributions of kinematic and kinetic errors to trajectory and grip force adaptation when transporting novel hand-held loads. **Journal of Neuroscience** 33: 2229-2236
- FLANAGAN JR, <u>Rotman G</u>, <u>Reichelt AF</u>, Johansson RS (2013)^[17] The role of observers' gaze behavior when watching object manipulation tasks: predicting and evaluating the consequences of action. **Philosophical Transactions of the Royal Society B: Biological Sciences** 368, 20130063 (8 pages)
- [80] Gallivan JP, Chapman CS, McLean DA, FLANAGAN JR, Culham JC (2013)^[1] Where one hand meets the other: Limb-specific and goal-dependent movement plans^[1] decoded from preparatory signals in single human parieto-frontal brain areas. **European Journal of** Neuroscience 38: 2408-2424
- Gallivan JP, McLean DA, FLANAGAN JR, Culham JC (2013) Where one hand meets the other: Limb-specific and goal-dependent movement plans decoded from preparatory signals in single human parieto-frontal brain areas. **Journal of Neuroscience** 33: 1991-2008
- Ingram JN, FLANAGAN JR, Wolpert DM (2013) Context-dependent decay of motor memories during skill acquisition. **Current Biology** 23: 1107-1112
- <u>Reichelt AF</u>, <u>Ash AM</u>, <u>Baugh LA</u>, Johansson RS, FLANAGAN JR (2013) Adaptation of lift forces in object manipulation through action observation. **Experimental Brain Research** 228: 221-234
- Säfström D, FLANAGAN JR, Johansson RS (2013) SEP Skill learning involves optimizing the linking of action phases. Journal of Neurophysiology 110: 1291-1300
- [75] <u>Stewart BM</u>, <u>Baugh LA</u>, <u>Gallivan JP</u>, FLANAGAN JR (2013) Simultaneous encoding of the direction and orientation of potential targets during reach planning: evidence of multiple competing reach plans. Journal of Neurophysiology 110: 807-816
- Baugh LA, Hoe E, FLANAGAN JR (2012) Hand-held tools with complex kinematics are efficiently incorporated into movement planning and on-line control. Journal of Neurophysiology 108: 1954–64
- Baugh LA, Kao M, Johansson RS, FLANAGAN JR (2012) Material Evidence interaction of priors and sensorimotor memory when lifting objects. Journal of Neurophysiology 108: 1262-9
- Danion F, <u>Diamond JS</u>, FLANAGAN JR (2012) The role of haptic feedback when manipulating non-rigid objects. Journal of Neurophysiology 107: 433-441
- Wolpert DM, Diedrichsen J, FLANAGAN JR (2011) Principles of sensorimotor learning. Nature Reviews Neuroscience 12: 739-51
- [70] Ingram JN, Howard IS, FLANAGAN JR, Wolpert DM (2011) SEP A single-rate contextdependent learning process underlies rapid adaptation to familiar object dynamics. PLoS Computational Biology 7(9): e1002196

- Fernández-Ruiz J, <u>Wong W</u>, <u>Armstrong IT</u>, FLANAGAN JR. (2011) Relation between reaction time and reach errors during visuomotor adaptation. **Behavioural Brain Research** 219: 8-14
- Ingram JN, Howard IS, FLANAGAN JR, Wolpert DM (2010) Multiple grasp-specific representations of tool dynamics mediate skilful manipulation. **Current Biology** 20: 618-623
- Pruszynski JA, King GL, Boisse L, Scott SH, FLANAGAN JR, Munoz DP (2010) Visual responses on human arm muscles reveal a rapid neural pathway linking visual input to arm motor output. **European Journal of Neuroscience** 32: 1049-1057

Sabbagh MA, Hopkins SFR, Benson JE, FLANAGAN JR (2010) Conceptual change and preschoolers' theory of mind: evidence from load-force adaptation. **Neural Networks** 23: 1043-1050

[65] Wolpert DM, FLANAGAN JR (2010) Q&A: Robotics as a tool for understanding the brain. BMC Biology 8:92

Wolpert DM, FLANAGAN JR (2010) Motor learning. Current Biology 20: R467-R472

Bowman MC, Johansson RS, FLANAGAN JR (2009) Eye-hand coordination in a sequential object manipulation task. Experimental Brain Research 195: 273-83

Johansson RS, FLANAGAN JR (2009) Coding and use of tactile signals from the fingertips in object manipulation. **Nature Reviews Neuroscience** 10: 345-359

- Ahmed AA, Wolpert DM, FLANAGAN JR (2008) Flexible representations of dynamics are used in object manipulation. **Current Biology** 18: 763-768
- [60] <u>Bursztyn LLCD</u>, FLANAGAN JR (2008) Sensorimotor memory for weight asymmetry in object manipulation. **Experimental Brain Research** 184: 127-133
- Chang EC, FLANAGAN JR, Goodale MA (2008) The intermanual transfer of anticipatory force control in precision grip lifting is not influenced by the perception of weight. **Experimental Brain Research** 185: 319-329
- FLANAGAN JR, <u>Bittner JP</u>, Johansson RS (2008) Experience can change distinct size-weight priors engaged when lifting objects and judging their weights. **Current Biology** 18: 1742-1747
- FLANAGAN JR, Terao Y, Johansson RS (2008) Gaze behavior when reaching to remembered targets. Journal of Neurophysiology 100: 1533-1543
- Hamilton AF, Joyce DW, FLANAGAN JR, Frith CD, Wolpert DM (2007) Kinematic cues in perceptual weight judgment and their origins in box lifting. **Psychological Research** 71: 13-21
- [55] Bays PM, FLANAGAN JR, Wolpert DM (2006) Attenuation of self-generated tactile sensations is predictive not postdictive. Public Library of Science: Biology 4(2): e28
- <u>Bursztyn LLCD</u>, Ganesh G, Imamizu H, Kawato M, FLANAGAN JR (2006) Neural correlates of internal model loading. **Current Biology** 16: 2440-2445
- FLANAGAN JR, <u>Bowman MC</u>, Johansson RS (2006) Control strategies in object manipulation tasks. **Current Opinion in Neurobiology** 16: 650-659
- Rotman G, Troje NF, Johansson RS, FLANAGAN JR (2006) Eye movements when observing predictable and unpredictable actions. Journal of Neurophysiology 96: 1358-1369
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- Ostry DJ, FLANAGAN JR (1992). Aspects of the equilibrium point hypothesis (λ model) for multi-joint movements. **Behavioral and Brain Sciences** 15: 784-786 (Commentary)
- Munhall KG, Ostry DJ, FLANAGAN JR (1991) Coordinate spaces in speech planning. Journal of Phonetics 19: 293-307
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Books

Wing AM, Haggard P, FLANAGAN JR (1996) (Eds) Hand and Brain: Neurophysiology and Psychology of Hand Movement. San Diego: Academic Press

Book Chapters and Invited Journal Articles

- Baugh LA, FLANAGAN JR (2012) Motor memory: when plans speak louder than actions. **Current Biology**. (Invited commentary and review)
- [25] <u>Baugh LA</u>, FLANAGAN JR (2011) Motor memory: a declaration of non-independence. Current Biology 21: R70-72. (Invited commentary and review)
- FLANAGAN JR, Johansson RS (2010) Object representations used in action and perception. In: Danion F, Latash ML (Eds) **Motor Control**, Oxford University Press.
- FLANAGAN JR, <u>Merritt K</u>, Johansson RS (2009) Predictive mechanisms and object representations used in object manipulation. In: Hermsdörfer J, Nowak DA (Eds)

Sensorimotor Control of Grasping: Physiology and Pathophysiology, pp 161-177, Cambridge University Press: Cambridge

- Johansson RS, FLANAGAN JR (2009) Sensory control of object manipulation. In: Hermsdörfer J, Nowak DA (Eds) Sensorimotor Control of Grasping: Physiology and Pathophysiology, pp 141-160, Cambridge University Press: Cambridge
- Wolpert DM, FLANAGAN JR (2009) Forward models. In: T Bayne, A Cleeremans, P Wilken (Eds) **The Oxford Companion to Consciousness**, Oxford University Press: Oxford
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- Johansson RS, FLANAGAN JR (2007) Tactile sensory control of object manipulation in humans. In: Kass JH, Gardner EP (Eds) The Senses: A Comprehensive Reference. Volume 5, Somatosensation, Elsevier Press: Oxford
- Wolpert DM, FLANAGAN JR (2003) Sensorimotor Learning. In: M Arbib (Ed) **The Handbook** of Brain Theory and Neural Networks (2nd Ed), pp 1020-1023, MIT Press: Cambridge
- Nakano E, FLANAGAN JR, Imamizu H, Osu R, Yoshioka R, Kawato T (2002) Composition and decomposition learning of reaching movements under altered environments: An examination of the multiplicity of internal models. **Systems and Computers in Japan** 33(11): 80-94
- FLANAGAN JR, Lederman SJ (2001) Neurobiology: Feeling bumps and holes. Nature 412: 389-391 (Invited commentary)
- [15] Nakano E, FLANAGAN JR, Imamizu H, Osu R, Yoshioka T, Kawato M. (1998) Decomposition and combination of multiple internal models. Transactions of the Institute of Electronics, Information and Communication Engineers, 17-24
- FLANAGAN JR (1996) Action-perception coupling in judgments of hand-held loads. In: Wing AM, Haggard P, Flanagan JR (Eds) Hand and Brain: Neurophysiology and Psychology of Hand Movement (pp. 415-430), San Diego: Academic Press
- FLANAGAN JR, Wing AM, Haggard P (1996) The task at hand. In: Wing AM, Haggard P, Flanagan JR (Eds) Hand and Brain: Neurophysiology and Psychology of Hand Movement. (pp. 5-11), San Diego: Academic Press
- FLANAGAN JR (1992) Review of Perspectives on Movement Coordination (Wallace SA (Ed), North-Holland Press, 1991). Journal of Phonetics (Book review)
- FLANAGAN JR, Feldman AG, Ostry DJ (1992) Equilibrium trajectories underlying rapid target-directed arm movements. In: Stelmach G, Requin J (Eds) Tutorials in motor control II (pp 661-676), North-Holland Press
- [10] Ostry DJ, FLANAGAN JR, Feldman AG, Munhall KG (1992) Human jaw kinematics and Control. In: Stelmach G, Requin J (Eds) Tutorials in motor control II. North-Holland Press
- Ostry DJ, Munhall KG, FLANAGAN JR, Bregman AS (1992) Paths and trajectories in orofacial motion. **Perilus**, XIV, 35-39, Stockholm University.
- FLANAGAN JR, Feldman AG & Ostry DJ (1991) Equilibrium control vectors subserving rapid goal-directed arm movements. In: Requin J, Stelmach G (Eds) **Tutorials in motor neuroscience** (pp 357-367), Kluwer Academic Publishers

- Munhall KG, FLANAGAN JR, Ostry DJ (1991) Sensorimotor transformations and control strategies in speech. In: Tohkura Y, Sagisaka Y, Vatiokis-Bateson E (Eds) **Speech perception, production and linguistic structure**. OHM Publishing, Tokyo
- Ostry DJ, FLANAGAN JR, Feldman AG, Munhall KG (1991) Human jaw motion control in mastication and speech. In: Requin J, Stelmach G (Eds) **Tutorials in motor neuroscience**. Kluwer Academic Publishers
- [5] Donderi DC, Ostry DJ, Smiley A, Munhall KG, FLANAGAN JR (1990) Ergonomic analysis of the Resue Coordination Centres and Marine Rescue Sub-Centres. Search and Rescue, Canadian Coast Guard. (Technical Report)
- Feldman AG, Adamovich SV, Ostry DJ, FLANAGAN JR (1990) The origins of electromyograms - explanations based on the equilibrium point hypothesis. In: Winters J, Woo S (Eds) Multiple muscle systems: biomechanics and movement organization (pp 195-213), Springer-Verlag, London.
- FLANAGAN JR, Ostry DJ (1990) Trajectories of human multi-joint arm movements: evidence of joint level planning. In Hayward V, Khatib O (Eds) **Experimental robotics 1, lecture notes in control and information science** (pp 594-613), London: Springer-Verlag
- FLANAGAN JR, Ostry DJ, Feldman AG (1990) Control of human orofacial and multi-joint arm movements. In Hammond GR (Ed) Advances in psychology: cerebral control of speech and limb movements. Springer-Verlag
- Ioannides G, Angeles J, FLANAGAN R, Ostry DJ (1990) Robot calibration using least-squares and polar-decomposition filtering. In Hayward V, Khatib O (Eds) **Experimental robotics 1**, **lecture notes in control and information science**. Springer-Verlag

Invited Talks / Invited and Refereed Conference Presentations

- Planning and control of object manipulation tasks. Talk given at the annual NeuGeneration Conference, Queen's University, January 2024
- [90] Interaction between sensorimotor and cognitive systems when performing real-world action tasks. Talk given to the Departments of Psychology and Kinesiology, McMaster University, January 2023
- Representing the world we act on. Talk given to for the Center for Neuroscience Studies Seminar Series, Queen's University, March 2021
- Neural mechanisms underlying the control of real-world manipulation tasks. Talk given to the Sensorimotor Research Group, Western University, March 2019
- The role of medial temporal lobe structures and the hippocampus in the control of object manipulation tasks. Conference on "Mechanisms of Dexterous Behavior", Janelia Research Campus/HHMI, Ashburn, Virginia, May 2018.
- Representing Competing Potential Targets in Motor Coordinates. Progress in Motor Control Society Annual General Meeting, Miami, Florida, July 2017.
- [85] Representing objects when interacting with the world. Psychology Colloquium Series, Dalhousie University, February 2017. Matariki Symposium on High-level Vision: From mechanisms to perception. Tübingen, Germany, April 2017.
- Representing objects when interacting with the world. Psychology Colloquium Series, Dalhousie University, February 2017.

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- Representing objects and actions when interacting with the world. Princeton University. October 2016.
- Representing objects and actions when interacting with the world. Bodian Seminar Lecture Series, Krieger Mind/Brain Institute, Johns Hopkins University. May 2016.
- Multiple motor plans versus a single plan: are multiple goals mapping onto multiple plans. Kennedy Krieger Institute, Johns Hopkins School of Medicine. May 2016.
- [80] Selection, planning and control of object-oriented action. Haskins Laboratories, Yale University. May 2016.
- Motor encoding of potential reach targets. Symposium on the neuroscience of decision-making. Université de Montréal. May 2016.
- Motor encoding of competing reach Options. Annual Neural Control of Movement meeting, Montego Bay, Jamaica, April 2016.
- Motor planning, decision-making, and control underlying object-oriented action. Brain in Action International Research Training Group, Simulcast to participants at Justus-Liebig-Universitat, Giessen, Philipps-Universitat, Marburg, Queen's University, Western University, and York University, June 2015.
- Planning and control mechanisms underlying object-oriented action. Institut de Neurosciences de la Timone. Marseilles, May 2015.
- [75] Planning and control of human object oriented actions. Université de Montréal. January 2015.
- Representing objects and potential actions when acting on the world. Perception and Action Seminar, Department of Cognitive, Linguistic, and Psychological Sciences, Brown University, Providence, December 2014.
- Sensory-motor control mechanisms underlying object-oriented action. International Society for Human Factors Conference, University of British Columbia, Vancouver, June 2013.
- Neural mechanisms underlying memory for weight in object manipulation. Department of Integrative Medical Biology, Umeå University, Sweden, May 2013.
- Planning and control of human object manipulation tasks. Department of Computer Science, Sensorimotor Computation Group, and Peter Wall Institute for Advanced Studies, University of British Columbia, March 2013.
- [70] Use of vision and eye movements when performing and observing object manipulation tasks. ZiF Research Group Workshop on Competition and Priority Control in Mind and Brain: New Perspectives from Task-Driven Vision. Bielefeld, Germany, October 2012.
- Relation between the control of action when manipulating objects and the explicit perception of object weight. Symposium on Vision for Perception and Action, 20 years later: where are we now?, Annual meeting of the Canadian Society for Brain, Behavior and Cognitive Science, Queen's University, Kingston, Canada, June 2012.
- Sensorimotor learning. Workshop on Models of Perceptual Learning and Perceptual Recognition, York University, U.K., March 2012.
- Sensorimotor control of object manipulation tasks. Department of Kinesiology and Physical Education, McGill University, February 2012.
- Gaze behaviour when performing and observing object manipulation tasks. Vision Science Colloquium, Universität Bielefeld, Germany, December 2009.

- Motor Control VII, Marseille, July 2009. Gaze behaviour when performing and observing object manipulation tasks. Workshop on Gaze Patterns in Dynamic Displays. Max Planck Institute for Human Cognitive and Brain Sciences in Leipzig, June 2009.
- Representations of objects used in action and perception. The Fifth Computational Motor Control Workshop, Ben-Gurion University of the Negev, Israel, June 2009.
- Invited discussant: session on the equilibrium point hypothesis. Workshop on Computational Motor Control, Institute of Advanced Studies, The Hebrew University of Jerusalem, Israel, June 2009.
- Eye-hand coordination in object manipulation tasks. Vision in 3D Environments, Centre for Vision Research, York University, June 2009.
- [60] Representing object mechanics in object manipulation tasks. Keynote Lecture in Motor Learning and Control, North American Society for the Psychology of Sport and Physical Activity (NASPSPA) Conference, Niagara Falls, June 2008.
- Is the control of bimanual grasping more than the sum of the reaching parts? Annual Neural Control of Movement meeting, Naples, Florida, April 2008.
- Coming to grips with mechanics: predictive control mechanisms in object manipulation. Muscle, Limb, Brain Workshop, Mathematical Biosciences Institute, The Ohio State University, January 2008.
- Internal models in action. Frontiers of Theoretical Neuroscience Workshop. The Centre for Theoretical Neuroscience, University of Waterloo, April 2007.
- Sensorimotor and perceptual representations engaged when performing and observing object manipulation tasks. Kenneth Craik Club, University of Cambridge, December 2006.
- [55] Sensorimotor and perceptual representations engaged when performing and observing object manipulation tasks. Department of Neuroscience, University of Minnesota, December 2006.
- Sensorimotor control points used when performing and observing manipulation tasks. Bridging the gap between sensation and motor control. Giessen University, Germany, July 2006.
- Sensorimotor and perceptual representations engaged when performing and observing object manipulation tasks. Cognitive Studies Perception and Action Symposium, Cornell University, Ithaca, May 2006.
- Sensorimotor control points used when performing and observing manipulation tasks. Centre for Vision Research, York University, April 2006.
- Bayes meets Charpentier: Can the size-weight illusion be inverted by experience? Three-Dimensional Sensory and Motor Space: Probabilistic mechanisms of learning and development in sensorimotor systems. European Science Foundation. Barcelona, October 2005.
- [50] Proactive control of gaze when performing and observing manipulation tasks. From Action to Cognition: Predictive mechanisms in the perception of action and the effect of action on perceptual and cognitive processes, Paris, 2005.
- Prediction and control in manipulation. Multidisciplinary Approaches to Sensorimotor Integration: Old Questions Meet Novel Concepts, Okazaki, Japan, 2004

- Learning prediction before control. Motor Learning Satellite Workshop (to the Society for the Neural Control of Movement), Barcelona, 2004.
- Prediction and control in skilled action. Physical Education and Health Departmental Seminar Series, Queen's University, February 2004.
- Prediction and control in skilled action. Department of Psychology, Penn State University, January 2004.
- [45] Motor memory systems underlying in skill acquisition. Action Club Talk, Department of Kinesiology, Penn State University, January 2004.
- Eye-hand coordination in action and action observation. Three-Dimensional Sensory and Motor Space: Computational Mechanisms for the Generation and Perception of Action in 3D Space, Naples, Italy, 2003.
- Prediction and control in motor learning. Conference on Computational Sensorimotor Control (sponsored by the Institute of Movement Neuroscience, University College London), Grasse, France, 2003.
- Learning in eye-hand coordination. Nobel Symposium on Neural Control of Skilled Hand Movements: Cognitive and Computational Aspects. Stockholm, Sweden, 2003.
- Prediction and control in skilled action. Human Mobility Research Centre, Queen's University, November 2003.
- [40] Prediction and control in skilled object manipulation. Department of Biomedical Engineering, Johns Hopkins University, October 2003.
- Prediction and control in object manipulation. Behavioural Brain Sciences Centre, University of Birmingham, June 2003.
- Prediction and control in object manipulation. Department of Psychology, McGill University, April 2003.
- Invited Discussant, McDonnell-Pew Conference on Forward Models and Cognition, Barcelona, Spain, 2002.
- Eye-hand coordination in action and the perception of action. Paper presented at the Annual Meeting of the International Society for Behavioural Neuroscience, Pointe-au-Pic, Quebec, 2002.
- [35] Patterns of gaze-hand coordination when performing and perceiving object manipulation tasks. Conference on Eye-Hand Coordination, Kingston, Ontario, 2002.
- Predictive and reactive coordination of gaze and hand movements in object manipulation. Paper presented at the Annual Neural Control of Movement meeting, Naples, Florida, 2002.
- State-dependent organization of motor working memory. Paper presented at the Annual Society for the Neural Control of Movement meeting, Naples, Florida, 2002.
- Learning multiple tasks: mapping the structure of motor working memory. Ashton Graybiel Spatial Orientation Laboratory, Brandeis University, March 2002.
- Coming to grips with movement planning: what the hand tells us about predictive control in object manipulation. Progress in Motor Control III: From Basic Science to Applications, Montréal, Canada, 2001.
- [30] Similar eye movement patterns during action and action observation: evidence for the motor theory of perception. Paper presented at the Annual Neural Control of Movement meeting, Seville, 2001.

- Motor Working Memory Systems Underlying Skill Acquisition. Institute of Movement Neuroscience, University College London, January 2001.
- Sensorimotor prediction and internal models in action and perception. Perspectives in Neuroscience Seminar Series, University of Western Ontario, February 2001.
- Motor working-memory systems underlying skill acquisition. Workshop on Arm Motor Control. University of Birmingham, 2000.
- [25] The notion of internal models in sensorimotor control: an overview. Paper presented at the Congress of the Scandinavian Physiological Society, Umeå, Sweden (Abstract published in Acta Physiologia Scand), 1999.
- The role of internal models of object and limb dynamics in motion planning. Department of Physiology Seminar Series, Queen's University, January 1999.
- Institute of Movement Neuroscience, University College London and Gatsby Computational Neuroscience Unit, June 1999
- Forward and inverse models in motion planning: evidence from grip force adjustments during object transport. Paper presented at the Japan/Canada Neuroscience Meeting, Tokyo, Japan, 1998.
- Coming to grips with internal models. Paper presented at the 8th annual Society for the Neural Control of Movement meeting, Key West, 1998.
- [20] Motion planning revealed by anticipatory grip force adjustments of the hand. Paper presented at the Sensory Motor Function of the Hand workshop, University of Birmingham, Birmingham, U.K., 1998.
- Control of forces and torques in multi-digit manipulation. Paper presented at the Neurophysiology of the Hand Symposium, Ascona, Switzerland, 1998.
- Anticipatory grip force adjustments during intentional and non-intentional movements in Tourette's Syndrome. Paper presented at the Neurophysiology of the Hand Symposium, Ascona, Switzerland, 1998.
- Forward and inverse models in motion planning: evidence from grip force adjustments during object transport. Advanced Telecommunications Research (ATR) Institute, Kyoto, Japan, April 1998.
- Levels of sensorimotor processing in the planning and control of arm movements. Université de Montréal, Dept. of Physiology, October 1997.
- [15] Levels of sensorimotor processing in the planning and control of arm movements. Paper presented at the XXVI Meeting of the International Congress of Psychology, Montréal. Abstract published in International Journal of Psychology 31: 2344-2344, 1996.
- The role of internal models of dynamic in motion planning: evidence from grip force adjustments during hand movements. Paper presented at Workshops in Sensorimotor Control: Measuring Body Motion, Bangor, Wales, 1996.
- Eastern Motor Group, Cambridge, U.K., July 1996.
- Sobell Department of Neurophysiology, Institute of Neurology, London, April 1996
- Control of reaching movements. Paper presented at Neuromotor Processes in Posture and Movement, Columbia University, New York, 1995.

[10] Department of Physiology, Umeå University, Umeå, Sweden, August 1995

Neuroscience Seminar Series, Queen's University, Kingston, March 1995

University of Arizona State, Tempe, February 1995

- Effects of a load applied to the wrist on the control of grip force during arm movement. Paper presented at Sensorimotor Function of the Hand: Mechanics and Control, Ascona, Switzerland, 1994.
- The effect of surface texture on weight perception when lifting objects with a precision grip. Paper presented at Sensorimotor Function of the Hand: Mechanics and Control, Ascona, Switzerland, 1994.
- [5] The role of internal dynamic models in motion planning and control. Alfred I du Pont Institute/University of Delaware, Wilmington, May 1994.

Center for Neurobiology and Behavior, Columbia University, New York, January 1994

University of Tübingen, Tübingen, Germany, March, 1993.

- Equilibrium control vectors subserving goal-directed arm movements. Paper presented at the NATO Advanced Study Institute on Motor Neuroscience, Calcatoggia, Corsica, 1990.
- Trajectories of human multi-joint arm movements: Evidence of joint level planning. Paper presented at First International Symposium on Experimental Robotics, Montreal, 1989.

Conference Presentations / Published Abstracts

- <u>Fooken J, Zhu T, Piekkola B</u>, Gallivan JP, FLANAGAN JR (2023) The coordination of left and right hand movements when acting on separate objects is shaped by completion for gaze. Poster presented at the Annual Meeting of the Society for Neuroscience, Washington D.C., USA.
- Standage D, De Brouwer A, Fooken J, Gale D, Nashed JY, FLANAGAN JR, Gallivan JP (2023) Sensorimotor adaptation and de-adaptation recruit shared explicit learning processes.
- Zhu T, Gallivan JP, Wolpert DM, FLANAGAN JR (2023) Temporal credit assignment in reward-based motor learning. Poster presented at the Annual Meeting of the Society for Neuroscience, Washington D.C., USA.
- <u>Fooken F.</u> Johansson RS, FLANAGAN JR (2022) Adaptive eye-hand coordination when manipulating and monitoring the environment in parallel. Poster presented at the annual meeting of the Society for the Neural Control of Movement, Dublin, Ireland.
- [140] Gale DJ, Areshenkoff C, Nashed JY, Standage D, Markello RD, FLANAGAN JR, Gallivan, JP. (2021) Distinct patterns of cortical manifold expansion and contraction underlie human sensorimotor adaptation. Poster presented at the Annual Meeting of the Society for Neuroscience, Chicago, USA.
- Cesanek E, Zhang Z, Ingram J, Wolpert DM, FLANAGAN JR (2021) The dynamics of manipulable objects are represented categorically as families or individuals. Selected talk presented at the Society for the Neural Control of Movement.
- <u>Areshenkoff C, Gale D, Standage D</u>, FLANAGAN JR, Gallivan JP (2021) Neural excursions from low-dimensional manifold structure in cognitive and sensorimotor brain networks explains intersubject variation in human motor learning. Poster presented at the Society for the Neural Control of Movement.

- Moskowitz JB, Berger SA, Castelhano MS, Gallivan JP, FLANAGAN JR (2019). Is visual search for target objects that will be acted upon influenced by motor costs? Poster presented at the Annual Meeting of the Society for Neuroscience, Chicago, USA.
- [135] <u>McGarity-Shipley MR</u>, Heald JB, Ingram JN, Gallivan JP, Wolpert DM, FLANAGAN JR (2019) Multiple motor memories are formed for different control units linking the controlled point on a manipulated object and the target location. Poster presented at the Annual Meeting of the Society for Neuroscience, Chicago, USA.
- <u>Gale DJ</u>, <u>Areshenkoff C</u>, <u>Nashed JY</u>, <u>Standage D</u>, FLANAGAN JR, Gallivan JP (2019) Network interactions of frontoparietal regions during visuomotor adaptation. Poster presented at the Annual Meeting of the Society for Neuroscience, Chicago, USA.
- Standage D, Nashed JP, Areshenkoff CN, FLANAGAN JR, Gallivan JP (2018) Whole-brain modular structure of spontaneous neural activity at rest predicts future sensorimotor learning and relearning. Poster presented at the Annual Meeting of the Society for Neuroscience, San Diego, USA.
- Gale D, Honda CH, Johnsrude IS, FLANAGAN JR, Gallivan JP (2018) Interactions between auditory and motor networks during command-driven actions. Poster presented at the Annual Meeting of the Society for Neuroscience, San Diego, USA.
- Heald JB, Ingram JN, FLANAGAN JR, Wolpert DM (2018) Learning to move in a switching environment: a jump Markov model of motor adaptation. Poster to be presented at the Annual Meeting of the Society for the Neural Control of Movement, Sante Fe, New Mexico.
- [130] Proud K, Heald JB, Ingram JN, Gallivan JP, Wolpert DM, FLANAGAN JR (2018) Multiple memories are formed when implicitly controlling different locations on a tool. Poster to be presented at the Annual Meeting of the Society for the Neural Control of Movement, Sante Fe, New Mexico.
- Atkinson CL, FLANAGAN JR, Sabbagh MA (2017) The development of processes associated with belief change over the preschool years. Poster presented at the Cognitive Development Society conference.
- Danion F, FLANAGAN JR (2017) Eye-hand coordination during visuomotor tracking under complex hand-cursor mapping. Poster presented at the Annual Meeting of the Visual Sciences Society, Naples, Florida.
- Sheahan HR, Ingram JN, Zalalyte GM, FLANAGAN JR, Wolpert DM (2017) Motor memory decay is specific to the motor plan, even if not executed. Poster presented at the Annual Meeting of the Society for the Neural Control of Movement, Dublin, Ireland.
- Carter MJ, de Brouwer AJ, Smail L, Gallivan JP, FLANAGAN JR (2017) Gaze behaviour reveals the specification of competing reach movements. Poster presented at the Annual Meeting of the Society for the Neural Control of Movement, Dublin, Ireland.
- [125] de Brouwer AJ, Albaghdadi M, FLANAGAN JR, Gallivan JP (2017) Extracting the explicit contributions to visuomotor adaptation through gaze patterns. Poster presented at the Annual Meeting of the Society for the Neural Control of Movement, Dublin, Ireland.

- Danion F, FLANAGAN JR (2017) The role of haptic feedback in eye-hand coordination when manipulating non-rigid objects. Poster presented at the Annual Meeting of the Society for the Neural Control of Movement, Dublin, Ireland.
- Heald, J, Ingram JN, FLANAGAN JR, Wolpert DM (2016) Separate motor memories are engaged when controlling different points on the same tool. Poster presented at the Annual Meeting of the Society for Neuroscience, San Diego.
- <u>De Brouwer AJ</u>, <u>Jarvis T</u>, Gallivan JP, FLANAGAN JR (2016) Rapid visuomotor corrections in reaching are modulated by gaze position. Poster presented at the Annual Meeting of the Society for Neuroscience, San Diego.
- Gallivan JP, Chapman CS, McLean DA, FLANAGAN JR, Culham JC (2015) Movement intention modulates neural responses in visual cortex. Poster presented at the Annual Meeting of the Society for Neuroscience, Chicago.
- [120] Trewartha K, Gallivan JP, FLANAGAN JR (2015) The role of dorsolateral prefrontal cortex in motor learning during force-field adaptation: A continuous theta-burst stimulation study. Poster presented at the Annual Meeting of the Society for Neuroscience, Chicago.
- Moskowitz JB, Gale DJ, Wolpert DM, Gallivan JP, FLANAGAN JR (2015) Decision making during motor learning: investment in learning and reward optimization. Poster presented at the Annual Meeting of the Society for Neuroscience, Chicago.
- Daliri A, FLANAGAN JR, Max L (2014) Sensorimotor control of self-timed vs. externally-timed nonspeech movements in adults who stutter. Poster presented at the Annual Meeting of the Society for Neuroscience, Washington.
- Barton K, Gallivan JP, Chapman CS, Wolpert DM, FLANAGAN JR (2014) Co-optimization of multiple competing action plans. Poster presented at the Annual Meeting of the Society for Neuroscience, Washington.
- <u>Gallivan JP</u>, Johnsrude IS, FLANAGAN JR (2014) Object-directed action sequences decoded from human frontoparietal and occipitotemporal networks. Poster presented at the Annual Meeting of the Society for Neuroscience, Washington.
- [115] <u>Reichelt A, Chan P</u>, FLANAGAN JR (2014) Predicting Choice Behaviour in Action Observation. Poster presented at the Annual Meeting of the Society for Neuroscience, Washington.
- <u>Trewartha K</u>, Garcia A, Wolpert DM, FLANAGAN JR (2014) The effects of aging and cognitive decline on adaptive processes for motor learning. Poster presented at the Annual Meeting of the Society for Neuroscience, Washington.
- Diamond JS, Dorris MC, Wolpert DM, FLANAGAN JR (2014) Rewards and movement-related costs shape fast decision-making in a human target foraging task. Poster presented at the Annual Meeting of the Canadian Association for Neuroscience, Montreal.
- <u>Trewartha K</u>, Garcia A, Wolpert DM, FLANAGAN JR (2014) Modelling altered adaptive processes for motor learning in aging. Poster presented at the Annual Meeting of the Canadian Association for Neuroscience, Montreal.
- Ingram JN, FLANAGAN JR, Wolpert DM (2014) Two interacting processes underlie the selection of sensorimotor modules during object manipulation. Poster presented at the Annual Meeting of the Society for the Neural Control of Movement.

- [110] <u>Diamond JS</u>, Nashed JY, Wolpert DM, FLANAGAN JR (2013) Grip-load coordination during rapid arm movement corrections in response to visuomotor perturbations. Poster presented at the Annual Meeting of the Society for Neuroscience, San Diego.
- <u>Gallivan JP</u>, Cant JS, Goodale MA, FLANAGAN JR (2013) Decoding reveals planning-related signals underlying object grasping and manipulation. Poster presented at the Annual Meeting of the Society for Neuroscience, San Diego.
- <u>Trewartha K, Case S</u>, FLANAGAN JR (2013) Integrating actions into object location memory: A benefit for active versus passive learning. Poster presented at the Annual Meeting of the Society for Neuroscience, San Diego.
- Daliri A, FLANAGAN JR, Max L (2013) Forward vs. inverse internal models in stuttering individuals' nonspeech movements. Talk given at the Annual American Speech-Language-Hearing Association meeting, Chicago.
- <u>Gallivan JP</u>, FLANAGAN JR (2013) fMRI decoding reveals preparatory signals underlying object grasping and manipulation. Talk given at the Annual Meeting of the Society for the Neural Control of Movement. San Juan, Puerto Rico.
- [105] <u>Khan AZ</u>, FLANAGAN JR (2012) Attention primes the visual not motor goal of reaching movements under a visuomotor rotation. Poster presented at the Annual Meeting of the Society for Neuroscience, New Orleans.
- Stewart BM, Baugh LA, Gallivan JP, FLANAGAN JR (2012) Parallel encoding of target locations and orientations when reaching to multiple potential targets. Poster presented at the Annual Meeting of the Society for Neuroscience, New Orleans.
- Stewart BM, Gallivan JP, Baugh LA, FLANAGAN JR (2012) Encoding target location and orientation in a reaching task. Poster presented at the Annual Meeting of the Canadian Society for Brain, Behaviour and Cognitive Science, Kingston, Ontario.
- Diamond JS, Danion F, FLANAGAN JR (2012) Separate contributions of kinematic and kinetic errors to arm motion and grip force control when learning novel object dynamics. Poster presented at the Annual Meeting of the Canadian Society for Brain, Behaviour and Cognitive Science, Kingston, Ontario.
- Danion F, <u>Diamond JS</u>, FLANAGAN JR (2012) Partial learning of object dynamics based on fingertip forces in the absence of kinematic errors. Poster presented at the Annual Meeting of the Society for the Neural Control of Movement, Venice, Italy.
- [100] Ingram JN, FLANAGAN JR, Wolpert DM (2012) Context-dependent decay and error tuning in motor adaptation. Poster presented at the Annual Meeting of the Society for the Neural Control of Movement, Venice, Italy.
- <u>Reichelt A, Ash A, Baugh LA</u>, Johansson RS, FLANAGAN JR (2011) Seeing is predicting: rapid parametric motor learning through action observation. Poster presented at the 41st Annual Meeting of the Society for Neuroscience, Washington, D.C.
- Baugh LA, Kao M, FLANAGAN JR (2011) Role of priors and sensorimotor memory when predicting weight for object manipulation. Poster presented at the 41st Annual Meeting of the Society for Neuroscience, Washington, D.C.
- Daliri A, FLANAGAN JR, Max L (2011) Sensorimotor learning in typically developing and stuttering children. Poster presented at the 41st Annual Meeting of the Society for Neuroscience, Washington, D.C.

- Stewart BM, Khan A, FLANAGAN JR (2011) Memory for position and orientation in a reaching task. Poster presented at the 41st Annual Meeting of the Society for Neuroscience, Washington, D.C.
- [95] <u>Markovik S, Baugh LA</u>, FLANAGAN JR (2011) Rapid adaptation of reactive sensorimotor control processes when lifting objects. Poster presented at the 41st Annual Meeting of the Society for Neuroscience, Washington, D.C.
- Baugh LA, Hoe E, FLANAGAN JR (2011) Reversing the reversal: Virtual tool use decreases movement costs and restores rapid online corrections during conditions of visuomotor reversal. Talk presented at the Annual Meeting of the Society for the Neural Control of Movement, Puerto Rico.
- Ingram JN, Howard IS, FLANAGAN JR, Wolpert DM (2011) A single-rate context-dependent process underlies rapid adaptation to familiar object dynamics. Poster presented at the Annual Meeting of the Society for the Neural Control of Movement, Puerto Rico.
- Diamond JS, Dorris MC, FLANAGAN JR (2011) Rapid implementation of eye and hand foraging strategy in a novel free-choice movement task. Talk presented at the Canadian Physiology Society Meeting, St. Gabriel, Quebec
- Markovik S, Baugh LA, FLANAGAN JR (2011) Rapid intelligent adaptation of reactive force control when lifting objects. Talk presented at the Canadian Physiology Society Meeting, St. Gabriel, Quebec
- [90] <u>Baugh LA, Hoe E</u>, FLANAGAN JR (2010) Presentation of a visual schema reduces reaction time costs associated with performing a visuomotor reversal. Poster presented at the 40th Annual Meeting of the Society for Neuroscience, San Diego, California
- Diamond JS, Dorris MC, FLANAGAN JR (2010) The influence of motor cost and reward value in a reach foraging task. Poster presented at the 40th Annual Meeting of the Society for Neuroscience, San Diego, California
- Moreno-Briseño P, Campos-Romo A, FLANAGAN JR, Fernández-Ruiz J (2009) Visuomotor processing: neural correlates of sensorimotor transformations. Poster presented at the 39th Annual Meeting of the Society for Neuroscience, Chicago, Illinois
- <u>Yak A</u>, FLANAGAN JR (2009) Size-weight maps used when lifting objects and judging their weights. Poster presented at the 39th Annual Meeting of the Society for Neuroscience, Chicago, Illinois
- Yak A, FLANAGAN JR (2009) Representation of distinct size-weight maps used when lifting objects and judging their weights. Poster presented at the Annual Neural Control of Movement meeting, Hawaii.
- [85] Kan MC, Boissé L, Munoz DP, Scott SH, FLANAGAN JR (2008) Early shoulder muscle activity is tuned to target direction during fast reaching under a visuomotor rotation. Poster presented at the 38th Annual Meeting of the Society for Neuroscience, Washington, D.C.
- Prokopenko RA, Max L, FLANAGAN JR (2008) Sensorimotor Learning in Stuttering Children: Nonspeech Movements with Non-Veridical Feedback. Poster presented at the American Speech Language Hearing Association convention, Chicago, Illinois.
- Ahmed AA, Wolpert DM, FLANAGAN JR (2008) Flexible representations of dynamics are used in object manipulation. Paper presented at the North American Congress on Biomechanics, Ann Arbor, Michigan.

- Ingram JN, Howard IS, FLANAGAN JR, Wolpert DM (2008) The representation of object dynamics during object manipulation. Poster presented at Cambridge Neuroscience 2008.
- Lee V, Kelley E, FLANAGAN JR (2008) Action prediction in individuals with autism spectrum disorder. Paper presented at the International Meeting for Autism Research, London.
- [80] Tzelnic T, Kuhlmeier VA, Latimer S, FLANAGAN JR (2008). Predictive Gaze to Novel Animate and Inanimate Entities in Adults and Infants. [1] Poster presented at The International Conference on Infant Studies. Vancouver, Canada.
- Ahmed AA, Wolpert DM, FLANAGAN JR (2007) Representation of object dynamics in bimanual object manipulation. Paper presented at the 37th Annual Meeting of the Society for Neuroscience, San Diego.
- Bursztyn LLCD, FLANAGAN JR (2007) Sensorimotor memory of weight asymmetry in object manipulation tasks. Paper presented at the 37th Annual Meeting of the Society for Neuroscience, San Diego.
- Duncan JRL, Kurtzer I, Fernandez-Ruiz J, FLANAGAN JR (2007) Visuomotor adaptation does not transfer from curved to straight line reaching movements. Paper presented at the 37th Annual Meeting of the Society for Neuroscience, San Diego.
- Fernandez-Ruiz J, <u>Wong W</u>, <u>Armstrong IT</u>, FLANAGAN JR (2007) Distinct processes underlyie reaching under visuomotor and mental rotations. Paper presented at the 37th Annual Meeting of the Society for Neuroscience, San Diego.
- [75] FLANAGAN JR, <u>Caldwell J</u>, Fernandez-Ruiz J (2007) Different mechanisms underlie the control of visually guided grasping and reaching. Paper presented at the 37th Annual Meeting of the Society for Neuroscience, San Diego.
- Prokopenko RA, Max L, FLANAGAN JR (2007) Adaptation to new sensorimotor mappings in individuals who stutter. Paper presented at the Progress in Motor Control VI meeting, Sao Paulo, Brazil.
- Prokopenko RA, Max L, FLANAGAN JR (2007) Prediction of self-generated movement consequences in individuals who stutter. Paper to be presented at the 37th Annual Meeting of the Society for Neuroscience, San Diego.
- Bowman MC, FLANAGAN JR (2006) Control of gaze when manipulating objects with different mechanical properties. Paper presented at the 36th Annual Meeting of the Society for Neuroscience, Atlanta.
- Tong C, Bursztyn LLCD, FLANAGAN JR (2006) Object-centered representations of dynamics acquired in motor learning. Paper presented at the 36th Annual Meeting of the Society for Neuroscience, Atlanta.
- [70] <u>Armstrong IT</u>, <u>Judson M</u>, FLANAGAN JR (2005) Eye-hand coordination following adaptation to a visuomotor reversal. Paper presented at the 35th Annual Meeting of the Society for Neuroscience, Washington, D.C.
- Bowman MC, FLANAGAN JR (2005) Gaze is controlled so as to capture the consequences of action. Paper presented at Three-Dimensional Sensory and Motor Space: Probabilistic mechanisms of learning and development in sensorimotor systems. European Science Foundation. Barcelona.

- <u>Rotman G</u>, FLANAGAN JR (2005) Eye movements during action observation. Paper presented at Three-Dimensional Sensory and Motor Space: Probabilistic mechanisms of learning and development in sensorimotor systems. European Science Foundation. Barcelona.
- Bursztyn LLCD, FLANAGAN JR (2005) Simultaneous learning of opposing object dynamics. Paper presented at the 35th Annual Meeting of the Society for Neuroscience, Washington, D.C.
- <u>Armstrong IT</u>, Pari G, <u>Bowman MC</u>, FLANAGAN JR (2004) Eye-hand coordination in Parkinson's disease. Paper presented at the 34th Annual Meeting of the Society for Neuroscience, San Diego.
- [65] <u>Bowman MC</u>, FLANAGAN JR (2004) Peripheral vision of hand used to guide predictive saccades in an object manipulation task. Paper presented at the 34th Annual Meeting of the Society for Neuroscience, San Diego.
- Tong C, FLANAGAN JR (2004) Eye-hand coordination in drawing and tracing. Paper presented at the 34th Annual Meeting of the Society for Neuroscience, San Diego.
- <u>Bowman MC</u>, FLANAGAN JR (2004) Visual and haptic feedback differentially mediate the control of eye-hand coordination in manipulation tasks. Paper presented at the Annual Neural Control of Movement meeting, Barcelona.
- Joyce DW, Hamilton A, FLANAGAN JR, Frith CD, Wolpert DM (2004) Kinematic properties affecting perceptual judgments in an Action Observation Task. Paper presented at the Annual Neural Control of Movement meeting, Barcelona.
- <u>Davidson PR</u>, Wolpert DM, Scott SH, FLANAGAN JR (2003) Novel dynamic environments applied as forces or torques: the role of mechanosensory feedback in motor learning and memory. Paper presented at the 33rd Annual Meeting of the Society for Neuroscience, New Orleans.
- [60] <u>Bowman MC</u>, <u>Armstrong IT</u>, FLANAGAN JR (2003) Contribution of visual and haptic feedback in the control of eye-hand coordination in manipulation tasks. Paper presented at the 33rd Annual Meeting of the Society for Neuroscience, New Orleans.
- <u>Klassen J, Tong C</u>, FLANAGAN JR (2003) Learning and recall of kinematic and dynamic sensorimotor transformations does not require awareness. Paper presented at the 33rd Annual Meeting of the Society for Neuroscience, New Orleans.
- Tong C, FLANAGAN JR (2003) Eye-hand coordination in skill acquisition. Paper presented at the 33rd Annual Meeting of the Society for Neuroscience, New Orleans.
- Rombough SR, FLANAGAN JR, Scott SH (2003) Single-joint power strategy for initiating multi-joint arm movements. Paper presented at the Winter Meeting of the Canadian Physiological Society, January, Quebec City.
- Rombough S, FLANAGAN JR, Scott SH (2002) Trajectory constraints in multi-directional whole-arm movements. Paper presented at the 32nd Annual Meeting of the Society for Neuroscience, Orlando, Florida.
- [55] <u>Caithness G</u>, <u>Hutchinson E</u>, FLANAGAN JR (2002) Independent learning of opposing force-fields using visual cues about dynamics. Paper presented at the Annual Neural Control of Movement meeting, Naples, Florida.

- FLANAGAN JR, LeVasseur AL, Riopelle RJ, Munoz DP (2001) Control of voluntary and reflexive saccades in Tourette's syndrome. Paper presented at the 31th Annual Meeting of the Society for Neuroscience, San Diego.
- Kozlov AP, Terao Y, FLANAGAN JR, Johansson RS (2001) Comparison of eye-hand coordination in unimamual and bimanual manipulatory tasks. Paper presented at the European Conference on Eye Movements, Turku, Finland.
- Maruoka EN, Armstrong IT, Scott SH, Munoz DP, FLANAGAN JR (2001) Eye-Hand Coordination and Dissociation in a Pro- and Anti-movement Paper presented at the 31th Annual Meeting of the Society for Neuroscience, San Diego.
- Munoz DP, LeVasseur AL, FLANAGAN JR, Riopelle RJ (2001) Control of volitional and reflexive saccades in Tourette's syndrome. Paper presented at the European Conference on Eye Movements, Turku, Finland.
- [50] Terao Y, FLANAGAN JR, Johansson RS (2001) Vision and eye movements in the control of memory guided tasks performed with a hand-held tool. Paper presented at the Annual Neural Control of Movement meeting, Seville.
- <u>Tong C</u>, Wolpert DM, FLANAGAN JR (2001) State-dependent interference between kinematic and dynamic learning. Paper presented at the 31st Annual Meeting of the Society for Neuroscience, San Diego.
- Tong C, FLANAGAN JR (2001) Task-specific internal models for kinematic transformations. Paper presented at the Annual Neural Control of Movement meeting, Seville.
- FLANAGAN JR, <u>Beltzner MA</u> (2000) Independence of sensory and cognitive predictions in the size-weight illusion. Paper presented at the 30th Annual Meeting of the Society for Neuroscience, New Orleans.
- Kozlov AP, Terao Y, FLANAGAN JR, Johansson RS (2000) Role of eye movements in control of a bimanual manipulatory task. Paper presented at the 30th Annual Meeting of the Society for Neuroscience, New Orleans.
- [45] <u>Tong C</u>, <u>Wigmore V</u>, Beninger RJ, FLANAGAN JR (2000) Visuomotor rotations of varying size and direction compete for a single internal model in working motor memory. Paper presented at the 30th Annual Meeting of the Society for Neuroscience, New Orleans.
- Burstedt MKO, FLANAGAN JR, Johansson RS (1999) Control of grasp stability in humans under various frictional conditions during multi-digit lifting. Paper presented at the Congress of the Scandinavian Physiological Society, Umeå, Sweden.
- FLANAGAN JR, Johansson RS (1999) Gaze-hand coordination subserving motion planning in object manipulation. Paper presented at the 29th Annual Meeting of the Society for Neuroscience, Miami Beach.
- Johansson RS, FLANAGAN JR (1999) Contact points during manipulation are probed by saccadic eye fixations. Paper presented at the 29th Annual Meeting of the Society for Neuroscience, Miami Beach.
- Johansson RS, Westling G, Bäckström A, FLANAGAN JR (1999) Saccadic eye fixations in manipulatory tasks. Paper presented at the Congress of the Scandinavian Physiological Society, Umeå, Sweden.
- [40] Nakano E, FLANAGAN JR, Imamizu H, Osu R, Yoshioka T, Kawato M (1999) Adaptation to altered kinematics and dynamics in reaching movements based on composition and

decomposition of learned internal models. Paper presented at the 29th Annual Meeting of the Society for Neuroscience, Miami Beach.

- Wing AM, FLANAGAN JR (1998) Acquiring the forward model. Paper presented at the Experimental Physiology Society, Oxford, U.K.
- FLANAGAN JR, Burstedt MKO, Johansson RS (1997) Control of fingertip forces in multi-digit manipulation Paper presented at the 27th Annual Meeting of the Society for Neuroscience, New Orleans, Soc Neurosci Abstr, Vol 23, Part 1, p 2092
- FLANAGAN JR, Wing AM (1996) Internal Models of Dynamics in Motor Learning and Control. Paper presented at the 26th Annual Meeting of the Society for Neuroscience, Washington, DC, Soc Neurosci Abstr, Vol 22, Part 2, p 897
- Jakobson LS, FLANAGAN JR, Munhall KG (1996) Anticipatory control of precision grip force in Tourette's Syndrome. Paper to be presented at the 26th Annual Meeting of the Society for Neuroscience, Washington, DC, Soc Neurosci Abstr, Vol 22, Part 1, p 427
- [35] Quinn LA, FLANAGAN JR, Kaminski TR (1996) Effects of accuracy constraints on multijoint arm movements in Huntington's disease. Paper to be presented at the 26th Annual Meeting of the Society for Neuroscience, Washington, DC, Soc Neurosci Abstr, Vol 22, Part 3, p 2039
- Wing AM, FLANAGAN JR, Richardson J (1996) Anticipatory modulation of posture and grip. Paper presented at the Experimental Physiology Society, London
- <u>Duff S</u>, FLANAGAN JR (1995) Coupling between release aperture and anticipated object size. Paper to be presented at the 25th Annual Meeting of the Society for Neuroscience, San Diego, Soc Neurosci Abstr, Vol 21, Part 1, p 422
- FLANAGAN JR, <u>Rao AK</u> (1995) Learning non-linear visuomotor mappings. Paper presented at the 25th Annual Meeting of the Society for Neuroscience, San Diego, Soc Neurosci Abstr, Vol 21, Part 3 p 1922
- FLANAGAN JR, <u>Rao AK</u> (1995) Motion planning in perceived coordinates. Paper presented at the 5th annual Society for the Neural Control of Movement meeting, Key West
- [30] <u>Majsak MJ</u>, Gentile AM, FLANAGAN JR (1995) Visual motion cues and paradoxical movements in Parkinson's disease patients. Paper to be presented at the 25th Annual Meeting of the Society for Neuroscience, San Diego, Soc Neurosci Abstr, Vol 21, Part 2, p 1249
- Majsak MJ, FLANAGAN JR, Gentile AM (1995) Modulation of ballistic reaching movements in Parkinson's disease: the effects of a moving versus stationary target. Paper presented at annual meeting of the American Physical Therapy Association: Combined Sections, Reno
- Wing AM, FLANAGAN JR, Tresilian JR (1995) Object dynamics and the anticipatory modulation of grip force. Paper presented at the 8th International Conference on Perception and Action, Marseille
- Wing AM, FLANAGAN JR (1995) Adaptation of grip force to load: Kinematics in motion planning. Paper presented at the Experimental Physiology Society, Cambridge
- FLANAGAN JR (1994) The effect of surface texture on weight perception when lifting objects with a precision grip. Paper presented to the British Psychological Society, Exeter
- [25] FLANAGAN JR (1994) Coupling of grip and load force during cyclic arm movements. Paper presented to the British Psychological Society, Exeter

- FLANAGAN JR, Wing AM (1994) The effect of surface texture on the perception of weight when lifting with a precision grip. Paper presented at the 24th Annual Meeting of the Society for Neuroscience, Miami Beach, Soc Neurosci Abstr, Vol 20, Part 2, p 1199
- <u>Quinn LA</u>, Hamel V, FLANAGAN JR, Kaminski TR (1994) Control of multijoint arm movements in Huntington's disease. Paper presented at the 24th Annual Meeting of the Society for Neuroscience, Miami Beach, Soc Neurosci Abstr, Vol 20, Part 2, p 1199
- FLANAGAN JR, Wing AM (1993) Coupling of grip force and load force during arm movements. Paper presented at the Brain Research Association, St. Andrews
- FLANAGAN JR, Wing AM (1992) Human force control: data and modelling. Paper presented at the 22nd Annual Meeting of the Society for Neuroscience, Anaheim, Soc Neurosci Abstr, Vol 18, Part 2, p 1054
- [20] Feldman AG, FLANAGAN JR, Ostry DJ (1991) Control variables underlying human arm and jaw movements. Paper presented at Sixth International Conference on Event Perception and Action. Amsterdam
- FLANAGAN JR, Feldman AG, Ostry DJ (1991) A model of human target-directed horizontal arm movement. Paper presented at 21st Annual Meeting of the Society for Neuroscience, New Orleans
- Ostry DJ, Feldman AG, FLANAGAN JR, Munhall KG (1991) Determinants of jaw movement in mastication and speech. Paper presented at 21st Annual Meeting of the Society for Neuroscience, New Orleans
- Ostry DJ, FLANAGAN JR, Feldman AG (1991) The control and kinematics of human jaw movement. Paper presented at the 121st meeting of the Acoustical Society of America, Baltimore, MD
- Ostry DJ, Munhall KG, FLANAGAN JR (1991) Paths and trajectories in tongue and jaw movement. Paper presented at The Symposium on Current Phonetic Research Paradigms: Implications for Speech Motor Control. Stockholm
- [15] Feldman AG, FLANAGAN JR, Ostry DJ (1990) Equilibrium vectors spaces for the control of multi-muscle systems. Paper presented at the 20th Annual Meeting of the Society for Neuroscience, St. Louis, Soc Neurosci Abstr, Vol 16, Part 2, p 1088
- FLANAGAN JR, Feldman AG, Ostry DJ (1990) Equilibrium vectors underlying movements to displaced targets. Paper presented at the 20th Annual Meeting of the Society for Neuroscience, Soc Neurosci Abstr, St. Louis, Vol 16, Part 2, p 1088
- Munhall KG, Ostry DJ, FLANAGAN JR (1990) Coordinate spaces in speech planning. Paper presented at the 2nd Seminar in Speech Production: Models and Data, Leeds, UK
- Munhall KG, Ostry DJ, FLANAGAN JR (1990) Scale changes in speech movements. Paper presented at the Advanced Telecommunications Research Workshop, Kyoto, Japan
- Ostry DJ, FLANAGAN JR, Feldman AG (1990) Human jaw motion control in mastication and speech. Paper presented at the NATO Advanced Study Institute on Motor Neuroscience, Calcatoggia, Corsica
- [10] Ostry DJ, Munhall KG, FLANAGAN JR, Feldman AG (1990) Control of human jaw movement in mastication and speech. Paper presented at the 20th Annual Meeting of the Society for Neuroscience, St. Louis, Soc Neurosci Abstr, Vol 16, Part 2, p 1319

- Sergio LE, FLANAGAN JR, Feldman AG, Ostry DJ (1990) 3-d kinematic analysis of hindlimb wiping movements in spinal frogs. Paper presented at the 20th Annual Meeting of the Society for Neuroscience, St. Louis, Soc. Neurosci Abstr., Vol 16, Part 1, p 117
- FLANAGAN JR, Feldman AG, Ostry DJ (1989) The equilibrium point model for two joint arm movement control. Paper presented at the 19th Annual Meeting of the Society for Neuroscience, Phoenix, Soc. Neurosci Abstr, Vol 15, Part 1
- Ioannides G, Angeles J, FLANAGAN JR, Ostry DJ (1989) Robot calibration using least-squares and polar-decomposition filtering. Paper presented at First International Symposium on Experimental Robotics, Montreal
- Ostry DJ, Feldman AG, FLANAGAN JR, Adamovich SV, Karpovich A (1989) Kinematic properties of frog hindlimb movement organization. Paper presented at VIth International Symposium on Motor Control, Albena, Bulgaria
- [5] Ostry DJ, Feldman AG, FLANAGAN JR, Adamovich SV, Karpovich A, Sergio LE (1989) Kinematic properties of frog hindlimb movement organization. Paper presented at the 19th Annual Meeting of the Society for Neuroscience, Phoenix, Soc Neurosci Abstr, Vol 15, Part 1
- FLANAGAN JR, Ostry DJ (1988) Kinematics of two and three link saggital arm and arm with pointer movements. Paper presented at 18th Annual Meeting of the Society for Neuroscience, Toronto, Soc Neurosci Abstr, Vol 14, Part 2
- Ostry DJ, FLANAGAN JR (1987) Human jaw movement kinematics in mastication and speech. Paper presented at the 17th Annual Meeting of the Society for Neuroscience, New Orleans, Soc Neurosci Abstr, Vol 13, Part 1, p 12
- Ostry DJ, FLANAGAN JR, Cooke JD (1986) The shape of the velocity curve varies with movement duration: Evidence from human arm movement, locomotion, mastication and speech. Paper presented at the 16th Annual Meeting of the Society for Neuroscience, Washington, D.C., Soc Neurosci Abstr, Vol 12, Part 2, p 971
- FLANAGAN JR, Ostry DJ, Hoshizaki TB, Gelinas MP (1985) Kinematic properties of human locomotor movements. Paper presented at 15th Annual Meeting of the Society for Neuroscience, Dallas, Soc Neurosci Abstr, Vol 11, Part 1, p 702

Training

Bachelor's Theses

Christina Bandomir (1997-98), Sonja Krawesky (1997-98), Jennifer Deans* (1997-98), Sarah Lolley (1998-99), Mike Beltzner (1999-2000), Virginia Wigmore (2000-01), Cinda Elliot (2001-02), Emma Hutchinson† (2001-02), Jessica Klassen (2002-03), Melissa Judson, Ewen MacKinnon[‡], Kyle Merritt (2003-04), Jennifer Bittner (2004-05), Katie Douglas (2005-06), Julia Marr[†], Lianne Wong[†], William Wong[†] (2006-07), Michelle Kan[†], Yin Lam[†] (2007-08), Daniel Berant[†], Stephanie Kenny[†], Sarah Charpentier (2008-09), Erica Hoe[†] (2009-10), Alyssa Ash, Michelle Kao[†] (2010-11), James Kim (2011-12), Stefan Case, Heather Shepherd (2012-13), Kathryn Barton, Percy Chan (2013-14), Dan Gale, Lindsey Logan[†], Paige Williams (2014-15), Stephanie Clayton, Tayler Jarvis (2015-16), Lauren Smail (2016-17), Ashley Lawson, Keaton Proud (2017-2018), Sarah Berger, Paula Rojas (2018-2019), Cassandra Morrow, Jennifer Oliver, Ragini Singh (2019-2020), Maude Vandenberg, Samantha Reitmaier, Kaela Amorim (2020-

2021), Elissa Robichaud, Qiansheng Sun (2021-2022), Yifan Chen, Bethany Piekkola (2022-2023).

*Mechanical Engineering, [†]Life Sciences, [‡]Engineering Physics (otherwise Psychology)

Graduate Students			
Mike Majsak*	Ed.D.	1995-1996	
Lori Quinn*	Ed.D.	1995-1996	
Ashwini Rao*	M.Ed.	1995-1996	
Christine Tong [†]	M.A.	1999-2001	
Erin Maruoke [‡]	M.Sc.	2000-2003	Co-supervisors: Doug Munoz, Stephen Scott
Graham Caithness [†]	M.A.	2001-2004	
Miles Bowman [‡]	M.A.	2002-2004	
	Ph.D.	2004-2009	
Lulu Bursztyn [‡]	M.D./M.Sc.	2004-2007	Awarded a Julie Payette Fellowship
Joe Duncan [†]	M.Sc.	2006-2008	
Amelie Yak [†]	M.Sc.	2008-2010	
Jonathan Diamond [‡]	Ph.D.	2009-2015	
Simona Markovik [‡]	M.Sc.	2009-2012	
Brandie Stewart [‡]	Ph.D.	2009-2015	
Andreas Reichelt [‡]	Ph.D.	2010-2015	Awarded a CIHR Vanier Scholarship
Josh Moskowitz [†]	M.Sc.	2013-2016	
	Ph.D.	2016-	
Ashley Bramwell [†]	M.Sc.	2014-2016	
Dan Gale [‡]	M.Sc.	2016-	
Corson Areshenkoff [‡]	Ph.D.	2017-	
Mike McGarity-Shipley [†]	M.Sc.	2017-2019	
	Ph.D.	2019-	
Tianyao Zhu [‡]	PhD	2020-	

*Teachers College, Columbia University, [†]Psychology Graduate Program, [‡]Neuroscience Graduate Program

Postdoctoral Fellows

Rob Ellis, Ph.D.	1996-1997	Co-supervisor: Susan Lederman
Irene Armstrong, Ph.D.	2000-2002	Co-supervisor: Doug Munoz
Stuart Marcovitch, Ph.D.	2001-2002	
Paul Davidson, Ph.D.	2003	
Gerben Rotman, Ph.D.	2003-2007	
Gabriel Robles-De-La-Torre, Ph.D.	2004-2005	
Lee Baugh, Ph.D.	2009-2011	
Aarlenne Khan, Ph.D.	2009-2011	Co-supervisor: Doug Munoz
Jason Gallivan, Ph.D.	2011-2015	Awarded a CIHR Banting Fellowship
Kevin Trewartha, Ph.D.	2012-2015	Awarded a FQRNT Fellowship
Anouk de Brouwer, Ph.D.	2015-2018	Co-supervisor: Jason Gallivan
Michael Carter, Ph.D.	2015-2017	Co-supervisor: Jason Gallivan
Joseph Nashed, Ph.D.	2016-2019	Co-supervisor: Jason Gallivan

Dominic Standage, Ph.D.	2016-	Co-supervisor: Jason Gallivan
Jolande Fooken, Ph.D.	2020-	Co-supervisor: Jason Gallivan

Teaching Experience

Teachers College, Columbia University

Analysis of Human Movement, Signals and Systems Analysis

Queen's University

Undergraduate Courses: Introduction to Psychology, Statistics in Psychology, Advanced Experimental Psychology, Advanced Topics in Cognitive Psychology: Motor Control, Advanced Topics in Cognitive Psychology: Cognitive Neuroscience, Signal Analysis

Graduate Courses: Motor Systems and Motor Control, Human Cognitive Neuroscience, Current Concepts in Sensorimotor Control (Psychology/Physiology/Anatomy and Cell Biology), Signal Analysis

Supervisory Committees

Supervisory Committees

Theodore Aliyiannis 2021-2023, Parsa Balalaie 2020-2023, Richard Moulton, 2020-2021, Spencer Finn 2020-2022, Kayne Park 2017-2023, Allen Champagne 2017-2018, Heidi Riek 2017-2023, Caitlin Atkinson 2015-2018, Sisi Xu 2015-2016, Nida Latif 2015-2017, Jonathan Beuk 2015-2016, Andreea Cotoi 2014-15, Parisa Khoozani 2014-2020, Samantha Drover 2014-2015, Seamus Weech 2013-2018, Effie Pereira 2013-2016, F. Babaei Bourojeni 2012-2014, Celina Nahanni 2011-2016, Sara Kalwarosky 2011-2012, Ashley Beaudoin 2011-2012, Joseph Nashed 2011-2014, Scott Robson 2011-2014, Jessica Burns 2009-2010, Mohsen Omrani 2009-2014, Janice Kan 2009-2010, Stephen Ball 2006-2008, Angela Coderre 2004-2009, Jon Cant 2005-2006, Andrew Pruszynski 2005-2010, Frederic Poirier 2001-2003, Stacey Rombough 2001-2003, Kan Singh 1999-2000, David Smith 1999-2000, Suzanne Goldbaum 1999-2000, Meredith Davidson 1998-1999, Jeff Jones 1998-2003, Irene Armstrong 1998-2000, Robert Ellis 1995-1996.

MSc and PhD Examining Committees

Parsa Balalaie	2023	MSc	Queen's	Internal Examiner
Theodore Aliyiannis	2023	MSc	Queen's	Internal Examiner
Joseph Nashed	2023	2 nd PhD	Queen's	Internal Examiner
Richard Moulton	2022	PhD	Queen's	Int/External Examiner
Janis Kan	2022	PhD	Queen's	Internal Examiner
Spencer Finn	2021	MSc	Queen's	Internal Examiner
Parisa Khoozani	2020	PhD	Queen's	Internal Examiner
Caitlin Atkinson	2017	MSc	Queen's	Internal Examiner
Meredith Poole	2017		Queen's	Internal Examiner
Nida Latif	2017	PhD	Queen's	Internal Examiner
Seamas Weech	2017	PhD	Queen's	Internal Examiner
Ghada Atalla	2016	MSc	Queen's	Internal Examiner
Jay Jantz	2016	PhD	Queen's	Internal Examiner

Benedict Chang	2015	PhD	Queen's	Internal Examiner
Effie Pereira	2014	MSc	Queen's	Head's Delegate
Joseph Nashed	2014	PhD	Queen's	Int/External Examiner
Hailey McInnis	2014	MSc	Queen's	Internal Examiner
Samantha Drover	2014	MSc	Queen's	Internal Examiner
Mohsen Omrani	2014	PhD	Queen's	Internal Examiner
Seamus Weech	2013	MSc	Queen's	Internal Examiner
Myuri Ruthirakuhan	2013	MSc	Queen's	Int/External Examiner
Takashi Mitsuya	2013	PhD	Queen's	Head's Delegate
Conor Wild	2012	PhD	Queen's	Int/External Examiner
Zane Zheng	2012	PhD	Queen's	Head's Delegate
Alicia Peltsch	2011	PhD	Queen's	Head's Delegate
Andrew Pruszynski	2010	PhD	Queen's	Int/External Examiner
Dorita Chang	2010	PhD	Queen's	Head's Delegate
Janice Kan	2010	MSc	Queen's	Internal Examiner
Jessica Burns	2010	MSc	Queen's	Internal Examiner
Mohsen Omrani	2009	MSc	Queen's	Internal Examiner
Andrew Mattar	2009	PhD	McGill	External Examiner
Jonathan Beuk	2009	MSc	Queen's	Internal Examiner
Joanna Gore	2009	PhD	Queen's	Internal Examiner
Nicholas Cothros	2008	PhD	Western	External Examiner
Rob Marino	2007	PhD	Queen's	Internal Examiner
Michael Sylvester	2007	MEd	Queen's	Int/External Examiner
Geoff King	2007	MSc	Queen's	Internal Examiner
Daniel Lametti	2007	PhD	McGill	External Examiner
Martin Heroux	2005	PhD	Queen's	Internal Examiner
Alison Godwin	2005	PhD	Queen's	Internal Examiner
Angela Coderre	2004	MSc	Queen's	Int/External Examiner
Glen Legault	2004	PhD	Queen's	Internal Examiner
Tracie Paine	2004	PhD	Queen's	Internal Examiner
Kan Singh	2004	PhD	Queen's	Int/External Examiner
Nicholas Cothros	2004	MSc	Western	External Examiner
Nicole Malfait	2004	PhD	McGill	External Examiner
Chen-ju Lai	2002	MSc	Queen's	Int/External Examiner
Denise Henriques	2002	PhD	York	External Examiner
Alice Whitney	2001	PhD	Univ. Coll. London	External Examiner
Mike Dorris	2000	PhD	Queen's	Internal Examiner
Andrew Bell	2000	MSc	Queen's	Internal Examiner
Peter Kwantes	1999	PhD	Queen's	Internal Examiner
David Smith	1999	PhD	Queen's	Internal Examiner
Pascale Pigeon	1998	PhD	Univ. de Montreal	External Examiner
Tom Wright	1998	PhD	Queen's	Internal Examiner
J. Robin Broughton	1998	MSc	Queen's	Int/External Examiner
Irene Armstrong	1998	PhD	Queen's	Internal Examiner
Paul Gribble	1997	PhD	McGill	External Examiner
Robert Ellis	1996	PhD	Queen's	Internal Examiner

Departmental Administration (Queen's Psychology)

Undergraduate Committee: 1996-1999 Academic Advisor: 1996-1999 Merit Committee: 1996-1997, 2008-2009 Departmental Computer Officer: 1997-1998 Safety Committee: 1997-2000, Co-Chair Graduate Committee: 1999-2000; 2001-2007, 2015-7 Priorities and Procedures Committee: 2001-2007, 2015-7 Chair of Brain, Behaviour and Cognitive Science Graduate Program: 2001-2007, 2015-2017 Departmental Computing Officer: 2021-

University Administration (Queen's)

Neuroscience Seminar Series Co-coordinator: 1996-2000 Academic Research Council, Division IV: 2000 Queen's Centre for Neuroscience Studies Executive: 2000, 2001-2003, 2006-2007, 2009-2012 Queen's Centre for Neuroscience Studies Training Committee, 2003-2012 Queen's Centre for Neuroscience Studies Graduate Committee, 2008-2012 Queen's Postdoctoral Working Group, 2008-2010 Fellowship Committee, Psychology Representative 2019-2020

Extramural Administration

Canadian Action Perception Network (CAPnet) Steering Committee, 2008-Neural Control of Movement (NCM) Society Board Member, 2008-2013