Ian Spencer Howard

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Education

1991	Speech Processing	PhD	University College London
1984	Electrical and Electronic Eng.	B.Sc. (Eng.)	University College London

Professional history

2013 - Current	Associate Professor in Computational Neuroscience, University of Plymouth
2012 - 2013	Visiting researcher, Computational and Biological Learning Laboratory Department of Engineering, University of Cambridge
2008	Visiting researcher, DLR, Oberpfaffenhofen-Wessling, Germany
2006 – 2012	Senior Research Associate, Computational and Biological Learning Laboratory Department of Engineering, University of Cambridge
2003 – 2006	Senior Research Fellow, Sobell Department, Institute of Neurology, London
1996 – 2003	Freelance software developer/analyst, Ingenieur Büro Howard, Göttingen, Germany
1992 – 1996	Software Engineer, Skalar Computer GmbH, Göttingen, Germany
1992	Post-Doctoral Research Assistant, III Physics Institute, University of Göttingen, Germany
1991 – 1992	Speech Processing Engineer, Nokia Mobile Phones (UK) Ltd
1989	Visiting researcher, III Physics Institute, University of Göttingen, Germany
1989	Visiting researcher, IPDS, Kiel University, Germany
1988 – 1990	Research Assistant, Phonetics and Linguistics, University College London

Membership of professional bodies

Society for the Neural Control of Movement
Society for Neuroscience
International Speech Communication Association (ISCA)

Peer review activities

Advanced Robotics
Biological Cybernetics
eNeuro
EPIROB
Experimental Brain Research
Frontiers
Human Brain Mapping
IEEE International Conference on Biomedical Robotics and Biomechatronics
IEEE/RSJ International Conference on Intelligent Robots and Systems
ICPhS
ICCASP
INTERSPEECH
Journal of the Royal Society
Journal of Neurophysiology
Journal of Neuroscience
Journal of Neuroscience Methods
Journal of Phonetics
Motor Control
Neuroscience
Neuroscience Letters
Neural Networks
PLoS One
PLoS Computational Biology
Psychological Science

Scientific Reports Speech Communications

Teaching experience

2013-current	Plymouth University
2019	SSTAR teaching award at the University of Plymouth
2019-current	BSc./BEng./MEng. Introduction to Robotics
2015-current	BSc./BEng./MEng. Machine Learning
	BSc./BEng./MEng. Control Engineering
2014-2017	BSc./MEng. Sensors and Actuators
	MSc./MEng. Robot Software Engineering
2013-2015	BSc. Network Programming in Java (Software engineering with networks)
	MSc./MEng Embedded systems & Android programming in Java
2008-2012	University of Cambridge, Supervisor on Introduction to Neuroscience
1986-1991	University College London, Demonstrator in Speech Science

Supervised students

2019	Etienne Rivière, Summer Intern student from Grenoble INP
2017	Alexandre Esa, Summer Intern student from Grenoble INP
2016	Damien Chabannes, Summer Intern student from Grenoble INP
2014-2017	Kathryn Francis, PhD student
2008	Oliver Krömer, MEng student

Supervised research staff

2013-2016	Christopher Ford, Experimental RA
2013-2015	Charles Howard, summer intern
2007-2008	Phillip Lyons, Technical Assistant
2004-2005	Richard Symonds, Laboratory Technical Assistant

Grants

2020	Bavarian State Ministry for Science, Research & the Arts, visit to TUM Germany £5k
2018	KTP with Software Solved (Exeter)
2018	Innovate UK, Plymouth contribution: Robotic Soft Selective Raspberry Harvester £40k
2018	Bavarian State Ministry for Science, Research & the Arts, visit to TUM Germany £3k
2014	Plymouth University Proof of Concept Funding, robotic vocal apparatus £17k
2013	Plymouth University Startup funding £20k

Invited talks

2019	January	Research Talk	Radboud University, Netherlands
	August	Research Talk	TU Darmstadt, Germany
	September	TUM retreat seminar	Raitenhaslach, Germany
2018	March	Institute of Neuroscience Seminar	Newcastle University, UK
	August	TUM retreat seminar	Raitenhaslach, Germany
2017	January	Winterschool Seminar	Chorin, Germany
	July	Center for Cog Sci Seminar	University of Freiburg, Germany
	August	Seminar	TU Munich, Germany
	September	TUM retreat seminar	Raitenhaslach, Germany
	November	Research Seminar	TU Dresden, Germany
2016	January	Bernstein Seminar	University of Freiburg, Germany
	April	Cognitive Science Workshop	TU Darmstadt, Germany
	July	Seminar	TU Munich, Germany

2015	February	Seminar	Imperial College, London, UK
	March	Psychology Seminar	University of Plymouth, UK
	March	Workshop	Osaka University, Japan
	April	Seminar	NICT, Osaka, Japan
	June	Seminar	TU Dresden, Germany
2013	February	Seminar	University of Plymouth, UK
2012	September	Invited Talk	Bioengineering12, Oxford, UK
2011	August	Special Session IEEE	ICDL EPIROB Frankfurt, Germany
	October	Seminar	University of Hertfordshire, UK
	October	Seminar	University of Plymouth, UK
	November	Seminar	MPI Tübingen, Germany
2010	March	MRC Seminar	University of Cambridge, UK
2008	June	3 Seminars, DLR	Oberpfaffenhofen-Wessling, Germany
	March	Seminar	University College Dublin
	January	Seminar	University of Stuttgart, Germany
2007	October	SpandH Seminar	University of Sheffield, UK
	October	Seminar	TU Berlin, Germany
	November	RCEAL Colloquia	University of Cambridge, UK
2006	March	Speech Science Forum	University College London, UK
2004	November	Speech Seminar	University College London, UK

Languages spoken

English (Native speaker)
German (Fluent; worked in a German speaking environment in Göttingen Germany, for 10 years)

Journal articles

Howard, I. S., Franklin, S. & Franklin, D. W. (2020). Asymmetry in kinematic generalization between visual and passive lead-in movements are consistent with a forward model in the sensorimotor system. PLOS ONE, doi.org/10.1371/journal.pone.0228083.

Francis, K. B., Gummerum, M., Ganis, G., Howard, I. S., & Terbeck, S. (2019). Alcohol, empathy, and morality: acute effects of alcohol consumption on affective empathy and moral decision-making. Psychopharmacology, 1-20.

Francis, K. B., Gummerum, M., Ganis, G., Howard, I. S., & Terbeck, S. (2018). Virtual morality in the helping professions: Simulated action and resilience. British Journal of Psychology, 109(3), 442-465.

Francis, K., Terbeck, S., Briazu, R., Haines, A., Gummerum, M., Ganis, G. & Howard, I. S. (2017) Simulating Moral Actions: An Investigation of Personal Force in Virtual Moral Dilemmas. Scientific Reports 7, Article number: 13954.

Howard, I. S., Ford, C., Cangelosi, A., & Franklin, D. W. (2017). Active lead-in variability affects motor memory formation and slows motor learning. Scientific Reports, 7.

Francis, K. B., Howard, C., Howard, I. S., Gummerum, M., Ganis, G., Anderson, G., & Terbeck, S. (2016). Virtual morality: Transitioning from moral judgment to moral action? PLOS ONE, 11(10), e0164374.

Howard, I. S., & Franklin, D. W. (2016). Adaptive tuning functions arise from visual observation of past movement. Scientific reports, 6.

Carroll, T. J., De Rugy, A., Howard, I. S., Ingram, J. N., & Wolpert, D. M. (2016). Enhanced crosslimb transfer of force-field learning for dynamics that are identical in extrinsic and joint-based coordinates for both limbs. Journal of neurophysiology, 115(1), 445-456.

Messum, P., & Howard, I. S. (2015). Creating the cognitive form of phonological units: The speech sound correspondence problem in infancy could be solved by mirrored vocal interactions rather than by imitation. Journal of Phonetics, 53, 125-140.

Howard, I. S., & Franklin, D. W. (2015). Neural tuning functions underlie both generalization and interference. PLOS ONE, 10(6), e0131268.

Howard, I. S., Wolpert, D. M., & Franklin, D. W. (2015). The value of the follow-through derives from motor learning depending on future actions. Current Biology, 25(3), 397-401.

Howard, I. S., & Messum, P. (2014). Learning to pronounce first words in three languages: An investigation of caregiver and infant behavior using a computational model of an infant. PLOS ONE, 9(10), e110334.

Howard, I. S., Wolpert, D. M., & Franklin, D. W. (2013). The effect of contextual cues on the encoding of motor memories. Journal of neurophysiology, 109(10), 2632-2644.

Howard, I. S., Ingram, J. N., Franklin, D. W., & Wolpert, D. M. (2012). Gone in 0.6 seconds: the encoding of motor memories depends on recent sensorimotor states. Journal of Neuroscience, 32(37), 12756-12768.

Messum, P., & Howard, I. S. (2012). Speech Development: Toddlers Don't Mind Getting It Wrong. Current Biology, 22(5), R160-R161.

Ingram, J. N., Howard, I. S., Flanagan, J. R., & Wolpert, D. M. (2011). A single-rate context-dependent learning process underlies rapid adaptation to familiar object dynamics. PLOS Computational Biology, 7(9), e1002196.

Howard, I. S., & Messum, P. (2011). Modeling the development of pronunciation in infant speech acquisition. Motor Control, 15(1), 85-117.

Howard, I. S., Ingram, J. N., & Wolpert, D. M. (2011). Separate representations of dynamics in rhythmic and discrete movements: evidence from motor learning. Journal of Neurophysiology, 105(4), 1722-1731.

Howard, I. S., Ingram, J. N., & Wolpert, D. M. (2010). Context-dependent partitioning of motor learning in bimanual movements. Journal of neurophysiology, 104(4), 2082-2091.

Ingram, J. N., Howard, I. S., Flanagan, J. R., & Wolpert, D. M. (2010). Multiple grasp-specific representations of tool dynamics mediate skillful manipulation. Current Biology, 20(7), 618-623.

Howard, I. S., Ingram, J. N., Körding, K. P., & Wolpert, D. M. (2009). Statistics of natural movements are reflected in motor errors. Journal of neurophysiology, 102(3), 1902-1910.

Howard, I. S., Ingram, J. N., & Wolpert, D. M. (2009). A modular planar robotic manipulandum with end-point torque control. *Journal of neuroscience methods*, *181*(2), 199-211.

Howard, I. S., Ingram, J. N., & Wolpert, D. M. (2008). Composition and decomposition in bimanual dynamic learning. Journal of Neuroscience, 28(42), 10531-10540.

Ingram, J. N., Körding, K. P., Howard, I. S., & Wolpert, D. M. (2008). The statistics of natural hand movements. *Experimental brain research*, *188*(2), 223-236.

Howard IS, Huckvale MA (2005) Learning to Control an Articulator Synthesizer by Imitating Real Speech, ZAS Papers in Linguistics (Berlin, Germany), 40, 63-78.

Körding, K. P., Fukunaga, I., Howard, I. S., Ingram, J. N., & Wolpert, D. M. (2004). A neuroeconomics approach to inferring utility functions in sensorimotor control. PLoS biology, 2(10), e330.

Walliker, J. R., & Howard, I. (1990). Real-time portable multi-layer perceptron voice fundamental-period extractor for hearing aids and cochlear implants. Speech Communication, 9(1), 63-72.

Conference papers

Howard I. S., (In press), Speech fundamental period estimation using a neural network, ESSV 2020 Magdeburg, Germany.

Howard I. S., (2019), A modular 3D-printed inverted pendulum, K. Althoefer et al. (Eds.): TAROS 2019, LNAI 11649, pp. 1–12, 2019.

Howard I. S. & Birkholz P., (2019), Modeling Vowel Acquisition using the Birkholz Synthesizer, ESSV 2019 Dresden, Germany.

Howard I. S., Franklin S. & Franklin D. W., (2018), Characterization of Neural Tuning: Visual Lead-in Movements Generalize in Speed and Distance, International Conference on NeuroRehabilitation, 1030-1033.

Howard I. S. & Birkholz P., (2018), Using state feedback to control an articulatory synthesizer, ESSV 2018 Ulm, Germany.

Howard I. S., (2017), Robotic actuation of a 2D mechanical vocal tract, ESSV 2017 Saarbrucken, Germany.

Howard I. S., (2016), Towards a mechanical vocal apparatus for vowel production, ESSV 2016 Leipzig, Germany.

Howard I. S. & Messum P., (2011), The computational Architecture of Elija: A model of a young child that learns to pronounce, ESSV 2011 Aachen, Germany, pp.138-145.

Howard I. S. & Messum P., (2011), Modeling Caregiver Tutored Development of Pronunciation in a Young Child, ESSV 2011 Aachen, Germany, pp.75-82.

Zacharias F., Howard I. S., Hulin T., Hirzinger G., (2010), Workspace Comparisons of Setup Configurations for Human-Robot Interaction, Proc. IEEE/RSJ International Conference on Intelligent Robots and Systems, pp. 3117 – 3122.

Huckvale M. A., Howard I. S., Fagel S., (2009), KLAIR: a Virtual Infant for Spoken Language Acquisition Research, Interspeech 2009 Brighton, pp. 696-699.

Howard I. S. & Messum P., (2008), Modelling motor pattern generation in the development of infant speech production, In: 8th International Seminar on Speech Production – (ISSP'08), Strasbourg, France: INRIA 2008, pp.165-168.

Howard I. S. Messum P.. (2007), A computational model of infant speech development, 12-th International Conference on Speech and Computer SPECOM (2007), pp.756-765.

Huckvale M. A. & Howard I. S., (2005), Teaching a vocal tract simulation to imitate stop consonants, Interspeech 2005 Lisbon, Portugal, pp. 3213-3216.

Howard I. S. & Huckvale M. A., (2005), Training a vocal tract synthesizer to imitate speech using distal supervised learning, In: 10th International Conference on Speech and Computer (SPECOM'2005), University of Patras, Greece, 2005, pp.159-162.

Howard I. S., (1990), Two-level word recognition using the multi-layer perceptron, Proc. IOA, Windemere, 1990.

Howard I. S. & Walliker J. R., (1989), The implementation of a portable real-time multilayer-perceptron speech fundamental period estimator, In Proceedings of Eurospeech 1989. pp.1206-1209.

Howard I. S. & Huckvale M. A., (1989), Two level recognition of isolated words using neural nets, First IEE conference on Artificial Neural Networks, London. pp. 90 – 94.

Howard I. S. & Huckvale M. A., (1988), Training feature detectors for use in automatic speech recognition, in

Proceedings of Speech'88 '7th FASE Symposium (Institute of Acoustics, Edinburgh), pp.1365-1372.

Howard I. S. & Huckvale M. A., (1988), Speech fundamental period estimation using a trainable pattern classifier, in Proceedings of Speech'88 '7th FASE Symposium (Institute of Acoustics, Edinburgh), pp.129-136.

Howard I. S. & Huckvale M. A., (1988), Acoustic phonetic attribute determination using multi-layer perceptrons, IEE colloquium digest 11 pp. 4/1-4/4.

Howard I. S. & Howard D. M., (1986), Quantitative comparisons between time domain speech fundamental frequency estimation algorithms, Proc. IOA, Vol 8, pp. 323-330.