

Alexander Forrence

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EDUCATION	Johns Hopkins University , Baltimore, Maryland, USA B.A. in Neuroscience, Concentration in Cellular and Molecular Biology	Sep 2010 – May 2014
WORK & RESEARCH EXPERIENCE	Action, Computation, & Thinking Lab , Postgraduate Yale University, Department of Psychology Supervisor: Samuel McDougle Tampa Bay Rays , Performance Science Assistant ▪ Worked on a confidential project (subject to a non-disclosure agreement; no further details available). Brain, Learning, Animation, and Movement Lab , Research Assistant Johns Hopkins School of Medicine, Department of Neurology Supervisors: John Krakauer, MD and Adrian Haith, PhD ▪ Designed and performed experiments for the study of movement and decision-making using Python (PsychoPy) and MATLAB (Psychtoolbox). ▪ Developed low-latency hardware for recording user movements during experiments, and synchronizing those movements with external stimuli. ▪ Carried out simulations and statistical analyses of behavioral experiments in R and Stan. ▪ Performed clinical assessments, such as the Fugl-Meyer and ARAT, on patients enrolled in the SMARTS II clinical trial, a trial to investigate methods to improve recovery of upper-limb movement following stroke. Auditory Neurophysiology Lab , Research Assistant Johns Hopkins School of Medicine, Department of Biomedical Engineering Supervisors: Xiaoqin Wang, PhD and Juan Huang, PhD ▪ Investigated similarities in how frequency is perceived between the auditory and tactile systems in humans.	Jul 2020 – Present Mar 2020 – Jul 2020 Jun 2015 – Mar 2020 May 2013 – Jan 2015
PUBLICATIONS	JOURNAL PUBLICATIONS [1] Hardwick, R.M., Forrence, A.D., Krakauer, J.W., and Haith, A.M. (2019). “Time-dependent competition between goal-directed and habitual response preparation.” <i>Nature Human Behaviour</i> , doi: 10.1038/s41562-019-0725-0. <i>bioRxiv</i> preprint: https://doi.org/10.1101/201095 . [2] Ding, Y., Gray, K., Forrence, A., Wang, X., and Huang, J. (2018). “A behavioral study on tonal working memory in musicians and non-musicians.” <i>PLOS One</i> , doi: 10.1371/journal.pone.0201765. [3] Wong, A.L., Goldsmith, J., Forrence, A.D., Krakauer, J.W., and Haith, A.M. (2017). “Reaction times can reflect habits rather than computations.” <i>eLife</i> , doi: 10.7554/eLife.28075. POSTER PRESENTATIONS [1] Forrence, A.D., Hardwick, R.M., Krakauer, J.W., and Haith, A.M. (2016). “Practice promotes skill through automatization: evidence from an arbitrary visuomotor association task.” <i>Annual Meeting of the Society for Neuroscience</i> , San Diego, California, USA. [2] Team Aezon. (2014). “Tackling the Tricorder.” <i>Wireless Health 2014</i> , Bethesda, Maryland, USA. [3] Huang, J., Forrence, A.D., Reinhardt, E., Hsiao, S., and Wang, X. (2014). “Auditory-tactile integration in temporal frequency discrimination.” <i>Annual Meeting of the Association for Research in Otolaryngology</i> , San Diego, California, USA.	
AWARDS	Awarded \$1000 travel grant from the Johns Hopkins Undergraduate Neuroscience Program for work presented at the Midwinter Meeting of the Association for Research in Otolaryngology, February 2014.	
PROGRAMMING PROJECTS	<ul style="list-style-type: none">toon: A Python package including tools for high-performance input handling and for animation.mglg: A Python package for minimal 2D graphics via OpenGL 3.3+.pystatslib: A pybind11 wrapper for StatsLib, a C++ library providing probability distributions.pygamemode: A Python wrapper for the Feral Interactive’s GameMode client API.	
	CONTRIBUTIONS <ul style="list-style-type: none">Template Model Builder (1.7.6), allowed simulating from a variety of distributions in the C++ template.psychopy (> 1.90.0), assisted transition to Python 3 and contributed bug fixes for the GLFW backend.ggplot2: Elegant Graphics for Data Analysis (Springer 2016), provided a technical review.	
	LANGUAGES Python, R, MATLAB, C++, C, Stan	
SOFTWARE	Linux, Windows, git, RStudio, Visual Studio Code, PlatformIO, Arduino IDE, Microsoft Office	