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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
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RESEARCH **Brain, Learning, Animation, and Movement Lab** Jun 2015 – Present

EXPERIENCE 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), MATLAB (Psychtoolbox), and Javascript (Phaser).
- Developed low-latency hardware for recording user movements during experiments, and synchronizing those movements with external stimuli.
- Performed simulations and statistical analyses of behavioral experiments in R and Stan.
- Assisted development of a novel force measurement device for hand rehabilitation in patients, including microcontroller code and higher-level interfaces to the device.
- 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 May 2013 – Jan 2015

Johns Hopkins School of Medicine, Department of Biomedical Engineering

Supervisors: Xiaoqin Wang, PhD and Juan Huang, PhD

- Investigated similarities in how frequency is perceived and encoded between the auditory and tactile systems.
- Recruited and tested participants for human psychophysical experiments.
- Analyzed behavioral experiments using hierarchical models in R.

PUBLICATIONS JOURNAL PUBLICATIONS

- [1] Wong, A.L., Goldsmith, J., Forrence, A.D., Krakauer, J.W., and Haith, A.M. (2017). “Reaction times can reflect habits rather than computations.” *eLife*, doi: 10.7554/eLife.28075.
- [2] Hardwick, R.M., Forrence, A.D., Krakauer, J.W., and Haith, A.M. (preprint). “Time-dependent competition between habitual and goal-directed response preparation.” *bioRxiv*, doi: <https://doi.org/10.1101/201095>.
- [3] Ding, Y., Gray, K., Forrence, A., Wang, X., and Huang, J. (2018). “A behavioral study on tonal working memory in musicians and non-musicians.” *PLOS One*, doi: <https://doi.org/10.1371/journal.pone.0201765>.

CONFERENCE PUBLICATIONS

- [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." *Annual Meeting of the Society for Neuroscience*, San Diego, California, USA.
- [2] Team Aezon. (2014). "Tackling the Tricorder." *Wireless Health 2014*, Bethesda, Maryland, USA.
- [3] Huang, J., Forrence, A.D., Reinhardt, E., Hsiao, S., and Wang, X. (2014). "Auditory-tactile integration in temporal frequency discrimination." *Annual Meeting of the Association for Research in Otolaryngology*, 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

- **toon**: tools for experimenters in psychophysics and neuroscience. This Python package provides a framework for polling input devices on a separate process. It also includes tools for animation, auditory stimulus generation, and coordinate manipulation.

CONTRIBUTIONS

- Template Model Builder (1.7.6), allowed simulating from a variety of distributions in the C++ template.
- transitions (0.5.0), enabled more complex ordered state machine specifications.
- 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++, Javascript, Stan

SOFTWARE Linux, Windows, git, RStudio, Visual Studio Code, PlatformIO, Arduino IDE, Microsoft Office