



**Exponent<sup>®</sup>**  
Engineering & Scientific Consulting

## Alex Hughes

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### Professional Profile

Mr. Alex Hughes specializes in managing the execution of large-scale data collection efforts across the globe. His expertise helps clients implement data-driven design decisions that improve next-generation consumer products.

Mr. Hughes supports the development of a wide array of products, including wearables, micromobility platforms, biometrics, AI, and augmented reality platforms. He works with clients to ensure that those products perform for all users by implementing ethical, privacy-centric data collection with maximally diverse datasets. His efforts serve to minimize data bias while preserving data quality. Mr. Hughes has spearheaded projects throughout the United States, Africa, India, and Asia.

Mr. Hughes has a M.S. in Physics from Stanford University, where his research focused on developing electronic devices in strongly-correlated 2-D electron systems. He has extensive experience with ultra-low-noise cryogenic electronic measurements, including creating custom measurement hardware to reduce vibrations and acoustic noise. He also has programmed electronic simulations and written low-level measurement control software.

### Academic Credentials & Professional Honors

M.S., Physics, Stanford University, 2017

B.S., Physics and Astronomy, University of Maryland, College Park, 2013

### Prior Experience

Teaching Assistant, Department of Physics, Stanford University, 2014 - 2017

Graduate Student Researcher, Department of Physics, Stanford University, 2013 - 2017

### Publications

Barnard, A., Hughes, A., Sharpe, A. et al. Absorptive pinhole collimators for ballistic Dirac fermions in graphene. Nat Commun 8, 15418 (2017). <https://doi.org/10.1038/ncomms15418>

Nakajima, Y., Hu, R., Kirshenbaum, K., Hughes, A., et al. Topological RPdBi half-Heusler semimetals: A new family of noncentrosymmetric magnetic superconductors. Science Advances 1, 1500242 (2015). <https://doi.org/10.1126/sciadv.1500242>

## Project Experience

Implemented optical character recognition script in Python to streamline data quality control for user-submitted pictures.

Managed big data collection user studies aimed to train machine-learning algorithms on real-world datasets.

Performed stress testing and subsequent root cause failure analysis of micromobility platforms.

Built budget forecasting and visualization tools for large, long-term projects in Excel.

Designed user study protocols for logistically-complex data collection efforts spanning multiple continents.

Supported clinical studies of wearable devices.