Yeongwoo Hwang

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EDUCATION

- Harvard University, PhD in Computer Science (August 2022 – Present)
- UT Austin, PhD in Computer Science (August 2020 – May 2022) **Incomplete, transferred to Harvard University.*
- Carnegie Mellon University, Bachelors in Computer Science (August 2014 – May 2018) – 4.0/4.0

ACADEMIC EXPERIENCE

- **PhD Student at Harvard University** (August 2022 – Present)
  - Research Quantum Complexity Theory, under supervision of Professor Anurag Anshu. Studying design of QMA-complete Hamiltonians and quantum property testing.
- **PhD Student at University of Texas, Austin** (August 2020 – May 2022)
  - Research in Quantum and Classical Complexity Theory, under supervision of Professor John Wright. Studying problems related to quantum multiplayer games and classical approximation of quantum algorithms.
- **Teaching Assistance for 15-251, Great Theoretical Ideas in Computer Science** (F16, S17, F17)
- **Research at Carnegie Mellon University**
  - (Fall 2017 – Spring 2018) Research in Fourier analysis of boolean functions, supervised by Prof. Anil Ada and Prof. Ryan O'Donnell. Introduced new metrics for understanding boolean function complexity. Additionally, studied decision tree representation of boolean functions, completely characterizing the relative power of conjunctive and disjunctive decision trees, with respect to regular decision trees.
  - (Fall 2016 – Spring 2017) Research in computational biology under Prof. Seyoung Kim in using graphical models to learn and interpret gene networks.

AWARDS AND HONORS

- **NSF Graduate Research Fellowship** (August 2022 – Present)

PUBLICATIONS

- *Unique Games hardness of Quantum Max-Cut, and a conjectured vector-valued Borell's inequality* with Joe Neeman, Ojas Parekh, Kevin Thompson, and John Wright. In proceedings of SODA 2023, QIP 2023 (https://arxiv.org/abs/2111.01254)

RELEVANT COURSES

Computer Science
- Coding Theory
- Great Theoretical Ideas in CS
- Complexity Theory
- Algorithm Design & Analysis
- Compiler Design
- Approximation Algorithms
- Information Theory
- Analysis of Boolean Functions
- Advanced Quantum Complexity

Mathematics
- Algebraic Structures
- Real Analysis
- Competition Math
- Probability Theory
- Statistical Inference
- Graph Theory

WORK EXPERIENCE

- **Software Engineer at Facebook, Boston** (August 2018 – June 2020)
  - IC4 (Level 2) Engineer working on data privacy infrastructure. Designed system to track attributes (e.g. user data) throughout Facebook's Data Warehouse, emphasizing a scalable and generalizable architecture. Worked on Off Facebook Activity project to disassociate off-Facebook events from user accounts. Lead engineer working on internal compiler / emitter to synchronously generate privacy-aware SQL queries.
- **Software Engineering Intern at Verily (formerly Google Life Sciences)**
  - (Summer 2017) Created pipeline using Docker to analyze genotyping and sequencing data for contamination. Additionally, worked on a method to more efficiently sequence multiple samples from a single population.
  - (Summer 2016) Part of the Genomics team at Verily, where I worked on optimizing various parallel algorithms, as well as developing a set of open source tools for gene analysis (https://github.com/verilylifesciences/genomewarp)