

# Mo Tiwari

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## **EDUCATION:**

**Stanford University**, Stanford, CA **GPA: 4.2+** 2017 – Present  
Ph.D. in Computer Science  
*Advisor: Sebastian Thrun*  
*Received over \$700,000 in fellowships and \$150,000 in grants*

M.S. in Computer Science (completed during Ph.D.) **GPA: 4.2+** June 2019

**California Institute of Technology**, Pasadena, CA **GPA: 4.0+** 2010 – 2013  
*Top 5% of Graduating Class*

B.S. in Mathematics with Honors **GPA: 4.0+** June 2013  
B.S. in Physics with Honors **GPA: 4.0+** June 2013

**Columbia University – Columbia College**, New York, NY **GPA: 4.0+** 2009 – 2010

## **EXPERIENCE:**

**SOFTWARE ENGINEER, TECHNICAL LEAD – FACEBOOK, INC.** 2015 – 2017

- Technical lead of the team building ThreatExchange, Facebook's platform for sharing cybersecurity information
- Led product and feature development through 5 major releases that grew the number of enterprise customers from 92 to 500+
- Managed 3 interns who received and accepted fulltime offers

**SECURITY RESEARCH SCIENTIST – EXPANSE, INC. (acquired for \$800MM)** 2014 – 2015

- As fifth fulltime employee, performed the first systematic, continuous, and Internet-scale capture and analysis of device data and security vulnerabilities
- Built backend and frontend infrastructure to help analysts understand terabytes of prostitution advertisements and uncover human trafficking
- Work indirectly led to arrests of human traffickers and rescue of victims

**RESEARCHER – DRW TRADING GROUP** Summer 2013

- Created valuation models for various financial instruments, such as interest rate swaps and swaptions

**RESEARCHER – JOHN PRESKILL GROUP** 2011 – 2012

- Proved that a certain class of quantum systems would never function as a form of quantum storage, eliminating their viability in a quantum computer
- Advised by Prof. John Preskill, Dr. Spiros Michalakis, Dr. Jeongwan Haah at Caltech

## RESEARCHER – LARGE HADRON COLLIDER (LHC)

Summer 2010

- Analyzed the first data from the Compact Muon Solenoid (CMS) experiment at the LHC, where the Higgs Boson was later discovered
- Discovered and corrected experimental defects by analyzing Missing Transverse Energy to calibrate experimental setups
- Later received admission to the Ph.D. program in Physics at MIT to continue research on this experiment

## RESEARCHER – YORKTOWN HIGH SCHOOL

2007 – 2009

- Developed an assistive aid to help patients with physical disabilities complete exercises
- Device led to an 80% increase in patients' exercise completion rate and a 34% decrease in recovery time
- Won third place in category, internationally, at Intel ISEF 2009

## PUBLICATIONS:

- Yoshua Bengio, Tristan Deleu, Edward Hu, Salem Lahlou, **Mo Tiwari**, Emmanuel Bengio. "GFlowNet Foundations." <https://arxiv.org/abs/2111.09266>. *In submission*.
- Ali Mohsen, **Mo Tiwari**. "Image Compression and Classification Using Qubits and Quantum Deep Learning." <https://arxiv.org/abs/2110.05476>. *In submission*.
- **Mo Tiwari** et al. "Classification of Bacterial and Fungal Infectious Keratitis Images Using Deep Learning." *In submission*.
- **Mo Tiwari**, Martin Zhang, James Mayclin, Sebastian Thrun, Chris Piech, Ilan Shomorony. "BanditPAM: Almost Linear Time  $k$ -medoids Clustering via Multi-Armed Bandits." [\*Neural Information Processing Systems \(NeurIPS\)\* 2020](#).
- **Mo Tiwari** et al. "Differentiation of Active Corneal Infections from Healed Scars Using Deep Learning." *Journal paper in Ophthalmology. Best Poster Award at associated conference, American Academy of Ophthalmology (AAO) 2020*.
- Serhat Arslan, **Mo Tiwari**, Chris Piech. "Using Google Search Trends to Estimate Global Patterns in Learning." [\*ACM Learning @ Scale \(L@S\)\* 2020](#).

## OPEN SOURCE CONTRIBUTIONS:

- **BanditPAM:** <https://github.com/ThrunGroup/BanditPAM>. A high-performance Python package, written in C++, that implements the algorithm from our NeurIPS 2020 paper and is pip-installable via `pip install banditpam`. **Primary author, 200+ stars**.
- **BIG-Bench:** <https://github.com/google/BIG-bench>. A set of benchmark tasks meant to probe the capabilities of large language models.
- **NL-Augmenter:** <https://github.com/GEM-benchmark/NL-Augmenter>. A set of data augmentations and filters for natural language data.

## **TEACHING AND MENTORSHIP:**

- **Course Assistant for Client-Side Technologies (CS193C):** Graded assignments, provided feedback, and answered questions for over 100 students each quarter during the summers of 2020 and 2021.
- **EDGE Mentor:** Mentored three early Ph.D. students in Computer Science at Stanford University.
- **Ph.D. Student Mentor:** informally mentored approximately a dozen undergraduate and M.S. students at Stanford University. Upward performance reviews available upon request.

## **INVITED TALKS:**

- **Highlights of Algorithms 2021 (HALG21) Conference\*:** “BanditPAM: Almost Linear Time k-Medoids Clustering via Multi-Armed Bandits.”
- **U.S. Food and Drug Administration\*:** “An Introduction to Clustering, Multi-armed Bandits, and BanditPAM.”
- **Twitch\*:** “Novel Data Augmentation, Multi-Armed Bandits, and more: New Machine Learning Techniques for Twitch Safety.”
- **C3.ai:** “k-medoids Clustering and Multimodal Data Augmentation.”
- **Facebook:** “ThreatExchange v2.8 Webinar.” Joint presentation.  
<https://www.youtube.com/watch?v=SVVC4ZLYHmk>
- **Microsoft Security Research Alliance:** “Tracking Advanced Persistent Threats with ThreatExchange.” Joint presentation.

\* denotes a virtual talk

## **ACADEMIC HONORS:**

- Stanford Interdisciplinary Graduate Fellowship (SIGF) 2020 – 2023
  - Full funding for the Ph.D. for 3 years
  - 1 of 33 graduate student awardees, University-wide, in cohort
  - 1 of 295 awardees since award inception in 2008
- J.P. Morgan AI Research Ph.D. Fellowship 2020
- Oak Ridge Institute for Science and Education (ORISE) Fellowship 2019 – Present
- UnifyID Fellow (Declined) 2018
- Pear VC Fellow 2017 – Present
- NSF Graduate Research Fellowship Program Honorable Mention 2013
- Caltech Summer Undergraduate Research Fellowship (SURF) 2011, 2012
- IBM T.J. Watson Memorial Scholarship 2009 – 2012
- Caltech - San Pietro Travel Prize Recipient 2011
- I. I. Rabi Scholarship 2009 – 2010
- Intel International Science and Engineering Fair (ISEF) - Third place 2009