

Curriculum Vitae
Jackson A. Killian
<https://killian-34.github.io/> | jkillian@g.harvard.edu

EDUCATION

- Ph.D. Computer Science** (in progress) (Aug 2019 – present)
Harvard University, Boston, MA
- Ph.D. Computer Science** (transferred) (Aug 2018 – Aug 2019)
University of Southern California, Los Angeles, CA
- B.S. Physics, Computer & Information Science** (Aug 2013 – May 2018)
Ohio State University, Columbus, OH Arts and Sciences Honors College
Overall GPA (4.00 scale): 3.994 Summa Cum Laude / Honors Research Distinction

RESEARCH EXPERIENCE

- Ph.D. Research Fellow – Computer Science** (Aug 2018 – present)
Harvard University, Boston, MA
Advisors: Dr. Milind Tambe (previously Dr. Bistra Dilkina, USC, 2018-19)
 - Develop new theory for classes of Restless Bandits to facilitate health intervention planning in low-data regimes
 - Build machine learning models to predict patient adherence to tuberculosis medications in India
 - Develop large-scale agent-based simulations to model the dynamics of COVID-19 in different populations
 - Collaborate with international teams across government, NGOs and academia to address public health challenges
- Ph.D. Research Intern – Computer Science** (Jun 2019 – Aug 2019)
Microsoft Research India
Advisor: Amit Sharma
 - Construct methods for explaining complex machine learning models to healthcare workers in India
 - Build fast custom decision tree algorithm for probing black box predictive models
 - Build relationships with non-profit organizations and state health officials in Bangalore and Mumbai
- Undergraduate Thesis – Computer and Information Science** (May 2017 – Apr 2018)
Ohio State University, Columbus, OH
Advisors: Dr. Kevin Passino and Dr. Arnab Nandi
 - Design study to gather smartphone sensor data and Transdermal Alcohol Content (TAC) from 19 students
 - Create mobile application and server to continuously collect and send sensor data over 12 hours
 - Process noisy accelerometer and TAC signals and design filters to ease downstream analysis using MATLAB
 - Extract features from signals and design intelligent systems to make classifications using MATLAB and Python
- Undergraduate Research Fellowship – Biophysics** (May 2016 – May 2017)
Ohio State University, Columbus, OH
Advisors: Dr. Ralf Bundschuh and Dr. Pearly Yan
 - Design computational workflow to make low-quality cancer samples useable in modern sequencing experiments
 - Utilize Ohio Supercomputing Center and bioinformatics software to quantify degradation in sequencing data
 - Adapt software based on discovered effects to improve sequencing data quality enabling downstream research
- Undergraduate Research Assistant – Biophysics** (Jan 2015 – Apr 2018)
Ohio State University, Columbus, OH
Advisors: Dr. Ralf Bundschuh and Dr. Pearly Yan
 - Collaborate with biologists to identify novel cancer-related characteristics in human genes and epigenetics
 - Develop software with Python and R to design computational workflows for high-throughput sequencing data
 - Design web applications for bioinformatics tools using Python, PHP, JavaScript, HTML and CSS
 - Build workflows to run on nodes of the Ohio Supercomputer Center to analyze terabyte-order datasets

PUBLICATIONS (with proceedings)

* - equal contribution

Mate, A*, **Killian, JA***, Xu, H, Perrault, A, Tambe, M. “Collapsing Bandits and Their Application to Public Health Interventions” *Neural Information Processing Systems (NeurIPS)*. 2020. <https://arxiv.org/abs/2007.04432>

Wilder, B, Charpignon, M, **Killian, JA**, Ou, HC, Mate, A, Jabbari, S, et al. “Modeling between-population variation in COVID-19 dynamics in Hubei, Lombardy, and New York City” *Proceedings of the National Academy of Sciences*. 2020. <https://doi.org/10.1073/pnas.2010651117>

Killian JA, Wilder B, Sharma A, Choudhary V, Dilkina B, Tambe M. “Learning to Prescribe Interventions for Tuberculosis Patients using Digital Adherence Data” *Proceedings of the 25th ACM SIGKDD International Conference on Knowledge Discovery & Data Mining (KDD)*. ACM, 2019. <https://doi.org/10.1145/3292500.3330777>

Killian JA, Passino K, Nandi A, Madden D, Clapp J. “Learning to Detect Heavy Drinking Episodes Using Smartphone Accelerometer Data” *Proceedings of the 4th International Workshop on Knowledge Discovery in Healthcare Data*. 2019. <http://ceur-ws.org/Vol-2429/paper6.pdf>

Killian JA, Topiwala T, Pelletier A, Frankhouser D, Yan P, Bundschuh R. “FuSpot: A Web-based Tool for Visual Evaluation of Fusion Candidates” *BMC Genomics*. 2018. 19:139. <https://doi.org/10.1186/s12864-018-4486-3>

He H, Li W, Yan P, Bundschuh R, **Killian J**, Labanowska J, Brock P, et al. “Identification of a recurrent LMO7-BRAF fusion in papillary thyroid carcinoma” *Thyroid*. 2018. <https://doi.org/10.1089/thy.2017.0258>

CONFERENCE TALKS

- “Personalized Adherence Management in TB: Using AI to Schedule Targeted Interventions”
 - **51st Union World Conference on Lung Health** (Oct 2020)
- “Collapsing Bandits and Their Application to Public Health Interventions”
 - Doctoral Consortium on **Computational Sustainability** (Oct 2020)
- “Evaluating COVID-19 Lockdown and Business-Sector-Specific Reopening Policies for Three US States”
 - **KDD 2020** Workshop on Humanitarian Mapping, virtual (Aug 2020)
- “Learning to Prescribe Interventions for Tuberculosis Patients using Digital Adherence Data”
 - **KDD 2019**, Anchorage, AK (Aug 2019)
- “Learning to Detect Heavy Drinking Episodes Using Smartphone Accelerometer Data”
 - **IJCAI KDH Workshop 2019**, Macao, China (Aug 2019)
- “Learning to Prescribe Interventions for Tuberculosis Patients using Digital Adherence Data”
 - **AAMAS AI4SG Workshop 2019**, Montreal, Canada (May 2019)

POSTER PRESENTATIONS

- **SIGKDD International Conference on Knowledge Discovery & Data Mining** (Aug 2019)
 - “Learning to Prescribe Interventions for Tuberculosis Patients using Digital Adherence Data”
- **Denman Undergraduate Research Forum** (1st Place) (Apr 2018)
 - “Smartphone-Based Intelligent System: Using AI to Track Sobriety using Smartphone Motion Sensors”
- **Denman Undergraduate Research Forum** (Mar 2017)
 - “FuSpot: A Web-based Tool for Visual Evaluation of Fusion Candidates”
- **Rustbelt RNA Meeting** (Oct 2016)
 - “FuSpot: A Tool for Fusion Detector Post-analysis Coverage Visualization of Chimeric RNA-seq Data”

INVITED TALKS

- “Predictive Models of Medication Adherence for India TB patients”
 - **AI vs. TB Workshop**, Mumbai, India (Jul 2019, Jan 2020)
 - **CompuSustNet**, Online (May 2019)
 - **BOTS Robotics Education Program**, LA, CA (Apr 2019)
 - **Goldman Sachs India**, Mumbai, India (Mar 2019)
 - **Wadhvani AI**, Mumbai, India (Mar 2019)
- “FuSpot: A Web-based Tool for Visual Evaluation of Fusion Candidates”
 - **Pelotonia Research Symposium**, Columbus, OH (Oct 2017)
- “OHI/O: Ohio State’s Hackathon Program”
 - **CIO Tomorrow**, Columbus, OH (Apr 2017)

PROFESSIONAL EXPERIENCE

Data Science Intern (May 2018 – Jul 2018)

Spatial.ai, Cincinnati, OH

Managers: Lyden Foust, Will Kiessling

- Collect, clean and segment geo-tagged social media posts from everywhere in the United States
- Design natural language processing pipelines using Python to assess “social scores” for cities using social media
- Create predictive models based on “social scores” and demographic data to estimate success of retail store fronts

Application Developer Intern

(May 2017 – Aug 2017)

PNC, Philadelphia, PA

Manager: James Snyder

- Work on software team to develop two ASP.NET web applications to support business operations
- Maintain Python/Django web application, retrofit with SSL certification to comply with security standards
- Design SQL Server Databases and Reports to support web applications

Independent Database Designer

(Jun 2015 – present)

Delaware City Bus Company, Sewell, NJ

Clients: Greg and Isabel Fath

- Design MS Access database for private bus company with 150 bus routes, 80 buses, and 600 employees/students
- Implement functionality to generate schedules for drivers and aides and auto-create all company and state reports
- Construct custom back-end using SQL and VBA to provide a tailored, seamless UI/UX

HONORS AND AWARDS

- **National Science Foundation Graduate Research Fellowship**, USC (Apr 2019 – Apr 2022)
- **1st Place in Math, Computation, and Analytics**, Denman Research Forum, OSU (Apr 2018)
- **Arts and Sciences Undergraduate Research Scholarship**, Ohio State University (Nov 2017)
- **Physics Senior Alumni Award**, Top graduating senior, OSU Physics (May 2017)
- **Pelotonia Undergraduate Research Fellowship**, Columbus, OH (May 2016 – May 2017)
- **Member of Phi Beta Kappa**, National Honor Society (Apr 2016)
- **Member of Phi Kappa Phi**, National Honor Society (Oct 2015)
- **Member of Sigma Pi Sigma**, Physics Honor Society (Jan 2015)
- **Dean’s List**, all semesters, Ohio State University Arts and Sciences Honors (Aug 2013 – Dec 2018)

LEADERSHIP AND TEACHING-RELATED EXPERIENCE

- **Organizer**, AI for Society Rising Stars Workshop (March 2020)
 - Solicit and arrange reviews for 170 submissions
 - Organize 2 days of talks, posters, networking, mentoring for 60 attendees
 - Invite, coordinate 5 keynote talks and expert panels
- **Volunteer**, BOTS robotics education program for elementary students (Jan 2019 – May 2019)
 - Teach groups of 5-6 students basics of block programming

- Lead professional development programming sessions for teachers
- **Teaching Assistant, CSCI 102 - Fundamentals of Computation, USC** (Aug 2018 – Dec 2018)
 - Deliver labs and course material reviews to section of 15 students
 - Create, manage, and grade 12 programming assignments for 200+ students
 - Manage team of 15 graders for 12 assignments, 2 exams, 200+ students
- **Creator, Organizer of ShowOHI/O**, a science-fair-style tech showcase (Apr 2017, Apr 2018)
 - 20 student projects, 60+ professional attendees, 100+ student attendees
 - Led team of 4 to secure venue, funding, projects, attendees, marketing
- **Organizer of DataFest** at Ohio State, a nation-wide data analytics competition (Apr 2017)
 - Organized sponsorship, marketing, team formation; mentored 150+ students
- **Web-team lead, Organizer of HackOHI/O**, Ohio State's hackathon program (Nov 2016, Oct 2017)
 - 750+ students, 200+ professional judges + mentors, 100+ industry partners
 - Organized sponsorship, marketing, team formation, branding; mentor at event
 - Led team of 6 developers to build web site, track site analytics
- **Project lead for data analysis contract** with Columbus Collaboratory (Apr 2016)
 - Led team of 4 to send survey nation-wide, perform text analysis on results

SKILLS

- **Programming Languages (proficient):** Python, Java, C#
- **Data Science/ML tools:** Sklearn, Numpy, Pandas, Keras, Pytorch, Tensorflow
- **Web-design Experience:** ASP.NET, Python/Django, PHP, JavaScript, HTML, CSS
- **Database-design Experience:** SQL, SQLite, Visual Basic, Microsoft Access
- **Research Programming Experience:** Python, R, Linux Environments, MATLAB, Android, iOS, Java