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 (and Dr. Bistra Dilkina, USC, 2018-19)

- Build machine learning models in Python and R to predict TB treatment regimen adherence for patients in India
- Design and implement machine learning models to decrease solving times of the CPLEX optimizer
- Collaborate with teams from Social Work and Computer Science to solve social good research 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
- Adapt Sklearn library to build fast custom decision tree algorithm for model probing
- Build relationships with non-profit organizations and state health officials in Bangalore and Mumbai

Undergraduate Thesis – Computer and Information Science [Link] (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. Pearlly 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. Pearlly 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)

Killian J, 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*. ACM, 2019. doi: 10.1145/3292500.3330777

Killian J, 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 J, 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. doi: 10.1089/thy.2017.0258.

CONFERENCE TALKS

- "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 (July 2019)
  - **CompuSustNet,** Online (May 2019)
  - **BOTS Robotics Education Program**, LA, CA (April 2019)
  - **Goldman Sachs India**, Mumbai, India (March 2019)
  - **Wadhwani AI**, Mumbai, India (March 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 – July 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 (April 2019 – April 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

- **Volunteer**, BOTS robotics education program for elementary students (Jan 2019 – present)
  - 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, C#, 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