

**Divya Shanmugam**  
*Curriculum Vitae*

**e-mail:** [divyas@mit.edu](mailto:divyas@mit.edu) **website:** <http://web.mit.edu/divyas/www/>

*Relevant research areas: time series analysis, supervised machine learning, computational biology*

## EDUCATION

---

**Master of Engineering Candidate, Massachusetts Institute of Technology** *Aug 2017-Jun 2018*  
Data-Driven Medicine Group (DDMG)  
Computer Science and Artificial Intelligence Laboratory (CSAIL)  
Advisor: John Guttag

**Bachelor of Science, Massachusetts Institute of Technology** *Aug 2013-Jun 2017*  
Major: Computer Science  
Concentration: South Asian Studies  
Advisor: Bonnie Berger

## EXPERIENCE

---

**Masters Candidate, Data-Driven Medicine Group, MIT** *Jun 2017 - Present*

- Developed an algorithm for multivariate time series comparison that outperforms state-of-the-art; current paper is under review for ICLR 2018
- Researching language diversity across economic class towards the development of dialect-agnostic representation for text

**Graduate Teaching Assistant, Intro to Machine Learning, MIT** *Aug 2017 - Present*

- Taught in MIT's Intro to Machine Learning course with over 250 registered students

**Scientific Associate Intern, D.E. Shaw Research** *Jun 2016- Aug 2016*

- Optimized molecular dynamics graphics algorithm to allow for 5x parallelism
- Extended MD software to render trajectories of multi-domain proteins through a hierarchical clustering model
- One of three intern projects presented at annual company-wide meeting

**Undergraduate Research Assistant, Computation & Biology Group, MIT** *Jan 2016 – Jun 2017*

- Developed methods to expedite metagenomic analysis by exploiting redundancy

Presented results at the 2016 Microbiome Center Symposium

**Software Engineering Intern, Counsyl** *Jun 2015- Aug 2015*

- Produced a metadata-retaining PDF viewer for the annotation of research papers
- Contributed to and currently maintain open-source project, MutationFinder. Code can be found at <https://github.com/divyashan/MutationFinder>

**Software Engineering Intern, Action** *Jan 2015 – Feb 2015*

- Created visualization framework using d3.js, Angular and RGL to visualize patient cohorts for observational studies

**Research Intern, Northwestern** *Jun 2012 – Aug 2012, Jun 2011 – Aug 2011*

- Created social network visualization to display relationships between investigators based on co-authored publications & collaborative grants using d3.js and Rails
- Created application to visualize gene expression data for Dictyostelium Discoideum, a model health

organism. Application runs on Northwestern University's dictyBase.

## PUBLICATIONS

---

Shanmugam, D., Blalock, D., Gutttag, J. *Jiffy: A Convolutional Approach to Time Series Similarity*.

Under review for ICLR 2018. Manuscript can be found at <http://web.mit.edu/divyas/www/jiffy.pdf>

## POSTERS

---

Shanmugam, D., Yu, W., Berger, B. *Compressive Metagenomics*.

Presented at the 2016 Center for Microbiome Informatics and Therapeutics Symposium.

## INDEPENDENT PROJECTS

---

### **Automated Image Segmentation of Liver Stage Malaria Infection**

Applied U-Net architecture towards the automated identification of liver-stage malaria infection. Report can be found at [http://web.mit.edu/divyas/www/6867\\_report.pdf](http://web.mit.edu/divyas/www/6867_report.pdf)

### **WordBrain Solver**

Coded an optimized implementation of a solver to a popular word puzzle app. Code can be found at

[https://github.com/divyashan/wordbrain\\_solver](https://github.com/divyashan/wordbrain_solver)

## AWARDS

---

**NSF Graduate Research Fellowship**, awarded in 2017

**First Place**, MIT Consulting Competition [2015, 2016]

**Valedictorian**, Naperville North High School

## SERVICE

---

### **Program Coordinator**, Freshman Leadership Program

Facilitated a week-long pre-orientation program discussing social issues such as race, gender and disability for incoming freshmen.

### **Founding Member**, Women in EECS, MIT

Organized community-building events for women in EECS, including Lightning Talks, where undergraduate women give short talks regarding their experiences in academia and industry.

### **UA Events Chair**

Organized university-wide undergraduate events including the annual stand-up comedy show and Spring concert.

### **Connection to College Program Coordinator**, Amphibious Achievement, MIT

Coordinated a semester-long program guiding low-income Boston Public School students through the college application process. Achieved 100% attendance to college.