VIKAS NATESH

Contact

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Education

- **New York University** 2017 - present
  M.S. in Computer Science
  Advisors: Prof. Anirudh Sivaraman and Prof. Leslie Greengard

- **The University of Chicago** 2009 – 2013
  B.A. in Economics
  B.A. in Biological Sciences

Research Experience

- **Programmable Networks**
  - *Sluice, A Network-wide Programming Model* Sept '17 – present
    Advisor: Prof. Anirudh Sivaraman
    Sluice is a high-level language for expressing and dispatching programs to run on a programmable network. Currently, network operators are required to use several complex SDKs to program different devices in a programmable network. This makes it cumbersome to create whole-network programs. The goal of this project is to abstract away device-specific information and provide the operator with a simple language to create network programs.
    Code: **`https://github.com/vnatesh/sluice`**

  - *Packet Stream-SQL* May '18 – Aug '18
    Advisor: Prof. Anirudh Sivaraman
    This system accelerates stream processing performance over a network to terabit per second speeds using a virtual programmable switch. It equips a network operator with SQL-like streaming primitives including filter (WHERE), project (SELECT), join (INNER JOIN), and aggregate operations (GROUPBY).
    Code: **`https://github.com/vnatesh/Packet-StreamSQL`**

- **Biostatistics and Genetics**
  - *Glaucoma Risk Factors* June '14 – June '15
    Advisor: Prof. Joan O'Brien
    This study investigates the risk factors associated with progression to blindness as a result of POAG in the African-American population. To identify risk factors for blindness, univariate logistic regression models were first performed, followed by a multivariate logistic regression model that included risk factors with $p < 0.10$ from the univariate analysis. It was found that access to care, initial visual acuity worse than 20/40, and poor control of intraocular pressure were the major risk factors associated with blindness from POAG.

- *Visual Field Grading System* June '14 – June '15
  Advisor: Prof. Joan O'Brien
  No method of grading visual field (VF) defects has been widely accepted throughout the glaucoma community. The SCHEIE (Systematic Classification of Humphrey visual fields - Easy Interpretation and Evaluation) grading system for glaucomatous visual fields was created to convey qualitative and quantitative information regarding visual field defects in an objective, reproducible, and easily applicable manner for research purposes.

- *Amyloid Plaque Formation* June '10 – Jan '11
  Advisor: Prof. Sangram Sisodia (UChicago)
  Used bacterial models to study the effects of nicastrin and presenelin subunits of the gamma-secretase complex on amyloid precursor protein in Alzheimer's Disease. We also investigated the effects that mutations in gamma secretase genes had on beta amyloid plaque formation.

Industry Experience

- **DC Energy,** Washington, DC July '15 – July '17
  Software Engineer
  - Member of portfolio management and data infrastructure teams in a quantitative trading firm specializing in electricity derivative markets
  - Developed trading systems for risk management, energy auction automation, and data warehousing using R, MySQL, and PHP in a distributed Linux environment
  - Designed and built models for risk analysis, implementing distributed Monte Carlo and hierarchical clustering
  - Primary maintainer of custom NoSQL caching package in R
  - Brought about a fivefold improvement in performance in both risk analytical engine and R caching code bases

- **University of Pennsylvania**, Philadelphia June '14 – June '15
  Researcher, Department of Ophthalmology
  Advisor: Prof. Joan O'Brien
  - Managed a 4000-patient database containing demographic, phenotypic, and genotypic information for an NIH-funded study investigating the genetic component of primary open angle glaucoma in African Americans
  - Performed statistical analysis on phenotypic data to evaluate the relationship between glaucoma and other comorbidities
  - Contributed to two publications in high-impact, peer-reviewed ophthalmology journals

- **APT Life Sciences**, Philadelphia Nov '14 – June '15
  Data Analyst: Bioinformatics
  - Identified publicly available genomic datasets to be analyzed by a proprietary genomic network analysis platform
  - Extended genetic interaction database using python and Unix scripting

Teaching Experience

- **Teaching Assistant, NYU CS** Fall 2018
  CSCI-UA.0202: Operating Systems
- **Grader, NYU CS** Fall 2018
  CSCI-UA.0101: Introduction to Computer Science

Published Works

- O'Brien J.M. et al. Risk Factors Associated with Progression to Blindness from Primary Open-Angle Glaucoma in an African American Population. Ophthalmic Epidemiology. June 27, 2016. (https://www.ncbi.nlm.nih.gov/pubmed/27348239)

- Sankar P. et al. The SCHEIE Visual Field Grading System. Journal of Clinical & Experimental Ophthalmology. May 11, 2017. (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5602567/)

Awards

UChicago Industrial Organization Competition March '12
1st Place

- Co-founded a company called 'LateNightBite' that developed a web-based coupon service providing discounts for late night consumers on food that restaurants would otherwise put to waste
- Analyzed market conditions by interviewing managers at 100 Chicago restaurants and created a cost and revenue model
- Presented to a panel of professors, won 1st place among 20 teams, and secured $10,000 in funding to jumpstart business