Caleb Koch

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EDUCATION

Cornell University, College of Arts and Sciences, Ithaca, NY **Expected May 2020**
Bachelor of Arts, Computer Science & Mathematics

Galileo Magnet High School, Danville, VA **May 2016**
International Baccalaureate Diploma, Advanced High School Diploma
GPA: 4.0/4.0, Class rank: 1/64

Relevant Courses: Discrete Structures, Probability Models and Inference, Object Oriented Programming and Data Structures, Theoretical Linear Algebra and Calculus, Number Theory, iOS App Development, Introduction to Logic

RELEVANT EXPERIENCE

University of Missouri – Columbia, CS REU in Networks, *Student Researcher* **May – July 2017**
- Researched machine learning techniques for load balancing in edge networks
- Implemented R*k*NN search algorithm for task offloading

Mathematics Department, Cornell University, Ithaca, NY, *Course Assistant* **Aug. 2016 - Present**
- Course assistant for Math 1120 (Calculus II)
- Lead weekly homework study sessions and help grade homework assignments

CU Sail, Cornell University, Ithaca, NY, *Navigation Team Member* **Aug. 2016 – May 2017**
- Designing and constructing an autonomous sailboat
- Implementing algorithms in C to assess directional instability

US Army Corps of Engineers, Alexandria, VA, *Research Intern* **June - Aug. 2016**
- Researched interpolation techniques for mining trajectory data
- Developed software in Java to test interpolation techniques, analyzed results in R
- Presented research at the Engineering Research and Development Center

National Institute of Aerospace, Hampton, VA, *Research Intern* **June - July 2014**
- Implemented PelcoD communication protocol on an Arduino platform for an infrared sensor on a UAV
- Fabricated ornithopter tail and wing components and revised lab procedures for ornithopter construction

SPECIALIZED SKILLS

Programming Languages: Java, C++, Swift, HTML, Markdown, R, LaTeX, Python
Tools: Arduino, R Studio, Git, Pandoc
Laboratory Skills: PCR, DNA microarray analysis, gel electrophoresis, titration, microscopy

PAPERS/PUBLICATIONS/PROJECTS

Identifying and Assessing Interpolation Methods for Mining Trajectory Data (2016), *ResearchGate*. DOI: 10.13140/RG.2.2.33049.01123.
- Presents major findings from research at the US Army Corps of Engineers

A Probabilistic Method for Predicting Stochastic Behavior in Conway's Game of Life (2016), *Complex Systems*. Under Review for publication.
- Developed a probabilistic model to analyze behavior of cellular automaton systems
- Awarded 2016 Intel STS Research Report Award

Reducing Angular Velocity by Means of Electromagnetism (2015), *Virginia Junior Academy of Science*. DOI: 10.13140/RG.2.1.3834.2241
- Documents design and construction of an electromagnetic brake for a bicycle
- Article featured on Instructables (`instructables.com/id/Designing-and-Testing-an-Electromagnetic-Braking-S/`)

Chemistry Made Easy! (2014), Google Play. Mobile Application.
- Developed an app to serve as a chemistry calculator

AWARDS

- **Jack Kent Cooke Scholar, 2016:** National merit scholarship to cover cost of college
- **Intel Science Talent Search 2016 Research Report Award:** Awarded for research on cellular automata
- **Virginia Mathematics Champion, National Beta Club, 2015:** Placed 1st in state mathematics competition