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Suyash Kumar

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Computer Science & Biomedical Engineering
http://suyashkumar.com

Education

Duke University Pratt School of Engineering: B.S.E, Computer Science and Biomedical Engineering (2016)

Software Skills

Java, Python, Matlab, C, LaTeX, Javascript, HTML/CSS, NodeJS, AngularJS, MongoDB.
Github: https://github.com/suyashkumar

Recent Projects (http://suyashkumar.com/#projects)

- **Cloud based Analytics Platform (Web App)** — May 2015
  Developed a cloud-based analytics platform and dashboard for bumper pool game data at Duke. The platform dynamically computes player ratings (Elo algorithm), performs player comparisons, and visualizes relevant data and statistics via a RESTful API. I designed and developed the full stack (Python backend+ AngularJS frontend). Github: http://git.io/vuW6B More: http://suyashkumar.com/#BumpExplore
- **CloudPulse (Web App + Pulse Device)** — Sept 2015
  Developed a cloud connected pulse plethysmograph device & platform. I built the frontend, backend, firmware, and analog electronics myself. My analog circuit design isolates the pulse pressure waveform from finger which is pushed over WiFi to a Python server to process data, add data to a database, and push the data to an AngularJS Web client for viewing. More: http://pulse.suyash.io Github: https://github.com/suyashkumar/CloudPulse
- **OpenSpiro (Bluetooth Spirometer + Android App + Cloud Platform)** — Dec 2015
  Developed a full stack cloud-based spirometer solution to measure respiratory health. Bluetooth device and companion app acquire data which is pushed to server and accessible via android/web app. I was responsible for all server/database/web development (NodeJS [RESTful API], AngularJS, MongoDB), implementing Bluetooth communication in firmware/android (C, Java), several Android app modules, & hardware testing. More: http://suyashkumar.com/#OpenSpiro and https://github.com/suyashkumar/OpenSpirometer
- **CloudRelay: Cloud Controlled Lighting (Apple Watch)** — Dec 2015
  Developed a relay-microcontroller circuit controllable via a RESTful API. Implemented simple Apple Watch (Swift), iPhone (Swift), and web applications (AngularJS). More+Demo: http://suyashkumar.com/#CloudRelay

Select Work Experience

- **Edison Engineering Intern | General Electric (GE) Healthcare** — Summer 2015
  Built several automation, calibration, and image quality projects on the CT Systems Engineering team:
  - Implemented Pinch Mode focal spot calibration software to be included in 1.5 product release (Python), at least 2x faster than previous process.
  - Developed an automated tool for scan mode config file generation at build time. Developed UI for systems team, delivered core to software team. Incorporated into 1.5 product build (Java, Java Swing).
  - Developed a critical platform for automated IQ Scorecarding for dual-energy imaging (Python, Bash). Led to estimated 800% reduction in scorecard time + higher confidence in system reliability.
  - Built a tool to predict tube current from detector data in order to explore uncertain measurements.
- **Research Fellow | Low-Cost Ultrasonic Elasticity Device (Kathy Nightingale lab)** — Current
  - Developing a first-of-its-kind low-cost ultrasonic tissue elasticity device from the ground up (and named in pending patent proposal).
  - Firmware is being developed in C and AM335x assembly. Public work: https://github.com/suyashkumar/bbb_adc
- **Janelia Undergraduate Scholar | Howard Hughes Medical Institute** — Summer 2014
  - Wrote computational tools to automate processing and analysis of large imaging and genomic datasets produced in my research. Reduced typical analysis time at least 400%.

Leadership

- **Chief Technology Officer | Duke University Union** — Current
  I lead a 5-person dev team to identify and develop software/hardware tools for Duke University's student union (w/ ~$1M expenditures annually). We are developing various open-source technologies for event data collection/management/review. I also consult and advise on all technical matters for DUU and report to University admin. Github: https://github.com/DUU-Dev-Ops/theseus (NodeJS, AngularJS, Mongo)
- **President | SmartHome Dorm** — Current
  President of Duke's premier live-in technology incubator and makerspace. I help organize everything from outreach programming (like hack nights & tech tutorials) to helping out with project funding.
- **Jazz Committee Chair | Duke University Union** — 2014-2015
  Led a team of students in developing, planning, and organizing over 15 successful events a semester, manage over $25k in funds to put on innovative Jazz Programming on campus through this Duke University Union (DUU) committee.

Relevant Coursework

CS330: Design & Analysis of Algorithms	CS201: Data Structures and Algorithms
CS250: Computer Architecture	CS310: Operating Systems
CS260: Computational Genomics	BME260: Modelling Cell & Molecular Systems
BME271: Signals and Systems (Signal Processing)	BME464: Medical Instrument Design
BME590: Mobile BME Device Design	BME542: Ultrasound Imaging Systems
Math 353 Ordinary/Partial Differential Eq.	ECE110: Fundamentals of Electrical Engineering

School Work Experience

- **Technical Consultant, Duke Office of Information Technology**
  A technical staffer for the University's makerspace
- **Supervisor, Multimedia Project Studio, Duke Office of Information Technology** 2012-2015
  Promoted from a consultant role to a supervisor role, I help manage the studio by deploying new systems, troubleshooting infrastructure, creating training materials, and managing other student employees. Helped coordinate, establish, and deploy our free-to-use 3D printing makerspace in Spring 2014.

Honors, Awards, Grants

- **Grants:** Barthalmus Research Grant, SMIF Undergraduate Research Grant sponsored by the Lord Foundation and Donald Alstadt Funds, Duke URS Independent Study grant
- **Fellowships:** HHMI's Janelia Undergraduate Scholarship, William R Kenan Fellowship (Scripps Research Institute), IGSP Summer Fellowship
- **Scholarships:** National Merit Finalist and Scholarship Winner, National AP Scholar, Pathfinder Science Scholarship, Scholastic Achievement Foundation's "Academic Excellence" Scholarship

Links

- **Website:** http://suyashkumar.com
- **Github:** https://github.com/suyashkumar