Kiran Gadhave

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EDUCATION

- **The University of Utah** Salt Lake City, UT
  Master of Science in Computer Science *Aug. 2017 – Present*
  - **Teaching Assistant**:
    - TA for the Introduction to Data Science course under the guidance of Prof. Alexander Lex and Prof. Braxton Osting.
    - Awarded 100% tuition fee waiver.
  - **Courses**: Operating System, Computer Vision, Advanced Algorithms, Natural Language Processing, Machine Learning

- **University of Mumbai** Mumbai, India
  BE, Mechanical Engineering; Class Rank: 10/120; *First Class with Distinction* *2011 – 2015*

EXPERIENCE

- **Cadsol Services** Mumbai, India
  Software Engineer *July 2015 - March 2017*
  - **Product Configurators(PC)**: Developed tools called PC to automate the process of complicated engineering drawing generation. Developed PC to interface with CAD softwares viz. Solidworks, Autodesk Inventor using their graphics API.
  - **Inventory Management Database**: Led the development of tools & schema for very large data storage and retrieval over local MySQL server for 100 simultaneous users, fast composite text search tool and a **scripting language** to write small macros for basic automation.

PROJECTS

- **University Library for Innovation in Scientific Securities and Economic Simulation(Project ULISSES)**: Working with Scientific Computing and Imaging(SCI) lab on developing loaders to parse and upload financial data from financial analysis firms onto structured open-source databases with goal of preparing it for data science research.

- **Adversarial Patches**: As a part of Computer Vision project working on training and implementing targeted adversarial patches to study ease of exploiting the weakness of deep learning algorithms to small adversarial changes imperceptible to human vision.

- **Neuro-inspired Computational Vision**: Currently working with **Prof. Neda Nategh (ECE program)** and **Prof. Behrad Noudoost (Neuroscience program)** with the Vision Computation Lab.
  Studying computational properties of neural systems to research novel approaches to computer vision in real world settings. My current task involved designing and programming experiments using Psychophysics toolbox in Matlab to collect vision data regarding spatial and temporal sensitivity and further test different machine learning algorithms to achieve similar results. The aim is to study the reason for such sensitivities and if similar effect can be mimicked by an algorithm.

- **Basic Operating System (opsys)**: Started a basic operating system project hosted on github to understand and practically apply concepts learned in operating systems coursework. Implemented bootloader for x86 from scratch. Now shifted focus on implementing different scheduling and paging algorithms in xv6 operating system.

- **Event Extraction System for Latin American Terrorism**: Built an event extraction system with neural network and NLP pattern matching components to extract events. **Multilayer Perceptron** neuralnet with ReLU was used to recognize the incidents in text. Pattern matching was used to fill the template with specific details about the events. Achieved 4th highest F-Score in the class.

- **Twitter Spambot Detection**: Ran multiple classifiers over Twitter Data collected using Social honeypots to detect spammers and malicious promoters on twitter. Tested 5 different classifiers and found that Bagged Forest classifiers with 1000 trees gave best performance of about **0.92** which is comparable with accuracy obtained in the original paper of **0.94**. I implemented all the classifiers from scratch and used 5−fold cross validation.

- **Space and time trade-offs in hash coding with allowable errors**: Implemented a data structure which allows probabilistic set membership tests with a small false positive rate, but allowing huge space and time savings. The data structure follows from the paper Cuckoo Filter(2014) and builds on similar ideas. We compared this with a much older data structure Bloom Filter. The new data structure not only performs better, but also allows deletion of items from set, which was not possible with Bloom Filters.

- **Quadrupedal insect robot**: Developed during my undergraduate studies as a part of Mechatronics class project. Designed and fabricated a four legged insect with two servos controlling 4 legs and MCS-51 microcontroller processing the timings for the walking gait. Entire insect and circuit was designed and then fabricated from scratch.

Awards

- **Sir Ratan Tata Trust Scholarship**: Was awarded Sir Ratan Tata Trust Scholarship in the academic year 2012-2013 for excellent performance in my undergraduate curriculum.

Extra-curricular activites

- **Team Captain for undergraduate racing team**: Competed in the prestigious BAJA SAE competition representing my college on national platform. Lead the undergraduate college team in designing and fabricating an cost-effective All-Terrain Vehicle using computer simulations to minimize errors during fabrication. Used computational methods to design and validate **chassis, suspension and brake geometries** under different loads. Was awarded first position from Mumbai region.

- **Volunteer Teacher**: Taught high school physics, chemistry and mathematics to students who couldn't attend high school due to financial constraints. Many of these students went on to give the required board exams and get a high school degree.

Programming Skills

Languages: C, Python, Matlab, Javascript
Technologies: scikit-learn, nltk, spacy, Image Processing and Psychophysics Toolbox