

Brandon McKinzie

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EDUCATION

UC BERKELEY

B.A. IN PHYSICS

MINOR IN COMPUTER SCIENCE

Dec 2016 | Berkeley, CA

GPA: 3.82

LINKS

Github: [mckinziebrandon](#)

LinkedIn: [mckinziebrandon](#)

Quora: [Brandon-McKinzie](#)

COURSEWORK

COMPUTER SCIENCE

Artificial Intelligence

Machine Learning

Neural Computation

Quantum Computing

Data Structures & Algorithms

Machine Structures

Interp. & Struct. of Computer Programs

PHYSICS

Advanced Electrical Laboratory

Advanced Experimentation Laboratory

Statistical and Thermal Physics

Particle Physics

MATHEMATICS

Discrete Math & Probability Theory

Advanced Linear Algebra

Differential Equations

Calculus I, II, III

SKILLS

LANGUAGES

Strong Proficiency:

C/C++ • Java • Python

Working Proficiency:

HTML • CSS • JavaScript

MISCELLANEOUS

Avid TensorFlow programmer

Advanced BASH scripting

Vim & \LaTeX enthusiast

RESEARCH AND WORK EXPERIENCE

AUTOMATIC GENERATION OF DEEP NEURAL NETWORKS

UC Berkeley | Advised by Prof. Dawn Song | Sep 2016 – Dec 2016

- Implemented support for early-stopping during architecture search process.
- Extended the set of allowed merge operations between network layers.
- Refactored initial codebase to improve stability & scalability.
- Automated conversion from Scala (architecture generation) to Python (Tensorflow/TFLearn).

VIRTUAL TRAINING WITH THE HTC VIVE

MIT Media Laboratory | Living Mobile Group | Summer 2016

- Designed virtual training environments in Unity3D for use with the HTC Vive.
- Implemented support for full-body tracking with personalized avatars.
- Built circuits containing inertial measurement units, bend sensors, and Arduinos.
- Gained experience developing with the Unity3D game engine and C#.

CLUSTERING ALGORITHM – SPHENIX COLLABORATION

MIT | Heavy-Ion Group | Summer 2016

- Implemented a photon clusterizer (C++) for the sPHENIX collaboration.
- Designed cluster visualization software and user interface.
- Optimized algorithms previously used at the Large Hadron Collider for new detector hardware.

EVENT GENERATION & JET FINDING

Berkeley National Lab | Relativistic Nuclear Collisions | Jan 2015 – June 2016

- Built a toy model event generator (C++) used at the Large Hadron Collider.
- Designed analysis framework for identifying jets in simulations and LHC data.
- Primary contributor to design and 3D-printing of Event-Plane Detector (STAR).
- Optimized topological cuts for D^0 meson decays detected at STAR.
- Official member of the ALICE and STAR collaborations.

LATTICE QUANTUM CHROMODYNAMICS COMPUTING

Brookhaven National Lab | Advised by Dr. Meifeng Lin | Summer 2015

- Employed novel QCD techniques to compute the proton isovector scalar charge.
- Computed meson properties from sets of simulated gauge configurations.
- Studied modern methods for calculating nucleon form factors.

COMPUTATIONAL NUCLEAR PHYSICS

UC Davis | Nuclear Physics Group | Aug 2013 – Aug 2014

- Computed 1st systematic uncertainty estimate of Upsilon polarization at CMS.
- Optimized effective signal of Upsilon produced in 2012 p-p STAR dataset.

AWARDS

2015 Dean's Honor List – UC Berkeley

2014 Best Undergrad. Theoretical Research – American Physical Society Conf.

2014 Laslett Scholarship – UC Berkeley Physics Department

2012 Longest-Serving Intern – Congressman Dan Lungren