Dr. Jonathan Leaf

Stanford University Ph.D. 2019

SUMMARY

I can jump into different domains and master them. I started my academic career in Physics and CS. My curiosity to understand how computers actually work led me to circuits. My interest in Physics and CS brought me to graphics research. Today I build software for designing virtual characters. These experiences have given me a full-stack view of technology development, which helps inform my decisions when developing products. I am most interested in using algorithms, artificial intelligence, and physics to impact people's lives.

PUBLICATIONS

Interactive Design of Yarn-Level Cloth Patterns

Jonathan Leaf, Rundong Wu, Eston Schweickart, Doug L James, Steve Marschner
Siggraph Asia 2018
http://graphics.stanford.edu/projects/yarnsim

EDUCATION

Stanford University, Ph.D. Electrical Engineering

January 2016 to June 2019

Stanford University, MS. Electrical Engineering

September 2013 to December 2015 - GPA : 3.98

UC Davis and CSU Sacramento, BS. Computer Science and Computational Physics

June 2011 to September 2013 and August 2009 to May 2011 - GPA : 3.98

EXPERIENCE

Senior Software Engineer at Ziva Dynamics

New York, NY - June 2019 to Present

Ziva Dynamics specializes in creating tools to help artists create film-quality characters for games, film, and enterprise applications. My role at Ziva is to design and develop new products so artists can quickly build better characters. I primarily use techniques from computer graphics, physics simulation, machine learning, and UI design.

Graduate Research with Prof. Doug James, Stanford University

Stanford, CA - January 2017 to June 2019

Fashion designers currently use inefficient design tools to get an inaccurate approximation of what the finished garment will look like. By combining the state-of-the-art yarn-level cloth simulation (C++, OpenGL) with GPU acceleration techniques (CUDA, Thrust, CUSP), we created a tool that will help creators visualize and design knitted clothing quickly and accurately.

- Impact: I created a tool to enable designers to prototype and deploy knitted designs faster, which can streamline the design process and allow designers to test the viability of their products more quickly and efficiently.
- Potential Applications: Clothing designers can use this to test the design of their clothing with more accuracy. Medical device companies could use this tool to test devices via 3D modeling and iterate quickly to create the best version of their product, without creating multiple physical prototypes. Military vendors could use this technology to simulate the strength of bullet proof vests.

New York, NY, USA
T: 650-980-8188
E: jonathancleaf@gmail.com
W: www.jonathancleaf.com

Dr. Jonathan Leaf

Stanford University Ph.D. 2019

Data Science Consultant, Return To Corporation

Palo Alto, CA - March 2018 to March 2019

Analyzed a bulk of data to produce interesting insights using machine learning and neural networks (Tensorflow). Built out a data science pipeline (Pandas) for the entire company to use, using Python and SQL.

Graduate Intern, NVIDIA GameWorks Team

Santa Clara, CA - July 2018 to September 2018

I worked on rigid-body simulators (such as PhysX) to improve performance for games. This role involved work in HPC, networking, and physics simulation.

Graduate Intern, Samsung Display Lab

San Jose, CA - July 2016 to September 2016

I studied computer architectures for future and present display link systems, such a VR and mobile devices. I created models with Matlab to simulate display energy efficiency. Using this tool and modern display compression algorithms, I demonstrated an opportunity for more than 2x energy savings than current implemented technology allows. My research informed the next iteration of link designs.

- Impact: I demonstrated opportunity for 2x energy savings in display link architectures, which can help make your VR headset and mobile phone stay cool. An important aspect of the mobile phone industry, my work can make your cell phone battery last longer.

Graduate Research with Prof. Mark Horowitz, Stanford University

Stanford, CA - January 2014 to December 2016

Positron Emission Tomography (PET) is used to detect active cancer tissue in the body, but these images are blurred by low quality sensor resolution. I developed the next iteration of an Application Specific Integrated Circuit (ASIC) to improve image resolution using a time-of-flight capable-sensing system that could scale to work in a real PET scanner. I used digital and analog design techniques to create the mixed-signal ASIC. I designed a level-crossing analog-to-digital converter for interfacing with silicon photomultipliers to achieve fine timing resolution with high energy efficiency.

- Impact: Developed the next iteration of electronics for PET scanners, to improve image quality and scale to an entire system. Better PET image quality leads to more accurate diagnosis of cancer and lower radioactive exposure duringeach scan.

Software Developer Intern, Intel

Folsom, CA - July 2012 to September 2012

At Intel, I worked on a team that develops a simulator for validating Intel's microprocessor architectures. I used C++ and profiling/debugging tools to improve the simulator. I made the simulator run twice as fast, affecting the productivity of over 1000 engineers that use the simulator.

- Impact: I made the code used by the thousands of engineers who design, validate, and test ever Intel core processor twice as fast, allowing them to be more productive and build better processors.

Undergraduate Research and Thesis with Prof. Mani Tripathi, UC Davis

Davis, CA - January 2012 to July 2012 and January 2013 to June 2013

For my undergraduate thesis, I helped create and run experiments on a sodium iodide photon detector to study the gamma-ray spectrum of radioactive materials. I used C++ to analyze the data, used circuit design tools to lay out circuits, and soldered on components to physically create the circuit boards.

For my undergraduate research, I programmed Field Programmable Gate Arrays (FPGAs) to process sensor data.

- Impact: I created and ran experiments to better understand radioactive gamma-ray spectra, allowing an international team of researchers to classify and discover radioactive compounds.

New York, NY, USA
T: 650-980-8188
E: jonathancleaf@gmail.com
W: www.jonathancleaf.com

Dr. Jonathan Leaf

Stanford University Ph.D. 2019

SKILLS

- Software: C, C++, C#, CUDA, Python, HPC (MPI), Java, Matlab, Mathematica, OpenGL, Julia, SQL, R, Unity3D, Unreal Engine, Perl, Ruby on Rails, Assembly, CUSP, Thrust, ROOT.
- Hardware: Mixed-Signal IC Design. PCB Board design. Verilog/SystemVerilog, HSPICE, Design Compiler, IC Compiler, Cadence, Spectre, Altium Designer, Genesis2, VHDL.

AWARDS

- Stanford Electrical Engineering Departmental Fellowship (2013)
- UC Davis Herbert A. Young Award (2013)
- Departmental Citations in Computer Science and Physics (2013)
- UC Davis Integrated Studies Honors Program (2013)
- UC Davis Regents Scholarship (2011)

COURSEWORK

- Machine Learning (ML), Artificial Intelligence (AI), Image Processing, Statistics
- Computer Graphics, Analytical Mechanics, Linear Dynamical Systems, Computational Math, Physics and Engineering of Radionuclide Imaging
- Introduction to VLSI Systems, Digital MOS Integrated Circuits, Fundamentals of Analog Integrated Circuit Design, Advanced Analog Integrated Circuit Design,Analog-Digital Interface Circuits
- Algorithm Design, Introduction to Computer Networking, Computer Systems Architecture, Operating Systems, Introduction to Database Systems

New York, NY, USA
T: 650-980-8188
E: jonathancleaf@gmail.com
W: www.jonathancleaf.com