Alex Eftimiades

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Experience

Paratii Video   Remote
Researcher (Freelance)   **2017 - Present**
- Researching existing and emerging technologies to integrate into tech stack and buisiness model.
- Designed and implemented smart contracts that track user data and financial transactions.
- Developed peer to peer protocol to deliver video content on demand.

ClimaCell Inc.   Boston, MA
Data Scientist   **2017**
- Acted as data scientist, data engineer, and dev ops for an early stage weather forecasting startup.
- Wrote and integrated Python clustering algorithm with data in MongoDB.
- Helped develop proprietary algorithm to extract local rainrates from signals between cell towers.
- Deployed production code to AWS instances.
- Developed offline caching system for large amounts of data with HDF5.
- Wrote scraper that continuously loaded JSON data from public data sources into MongoDB.

Comsol Inc.   Burlington, MA
Developer   **2016 - 2017**
- Developed new software features for for mid-size computer simulations company.
- Researched new laws of physics to integrate into multi-million dollar product suite.
- Integrated new features into Java codebase.
- Refactored low level C++ to streamline higher level development.
- Wrote internal technical specifications and user facing documentation, and technical support.

American Dental Association Foundation   Gaithersburg, MD
Software Engineer (Freelance)   **2015 - 2016**
- Identified numerical means of characterizing 3D image data, designed and built the associated data pipeline.Developed new software features for for mid-size computer simulations company.
- Scope included cleaning 3D image scans with Python, organized data with HDF5, and producing automatic visualizations with matplotlib.
- Gave presentations to biologists at the American Dental Association Foundation and computer scientists at the National Institute of Standards and Technology.
- Coathored accepted journal article.

University of Maryland Baltimore County   Catonsville, MD
Researcher   **2014 - 2015**
- Researched numerical means of verifying Einstein's equivalence principle.
- Compared mathematical models and corresponding numerical means of simulating electrons traveling through curved spacetime.
- Compared techniques using Mathematica and custom finite difference time domain with Python and delivered written report.

Software Engineer (Freelance)   **2014**
- Optimized simulation of quantum encryption experiment and delivered visualizations of data produced using Python and C.
- Produced entire plots in 50 minute run where original code took 4 days to produce a single point.

- Coauthored submitted journal article.

Tor   Remote

Software Engineer (Freelance)   **2013**

- Wrote multithreaded software in Python to circumvent Internet censorship.
- Documented potential vulnerabilities in spec, developed network protocol to relay arbitrary TCP traffic over one or more XMPP chatlines using open source API, SleekXMPP.

University of Maryland College Park   College Park, MD

Research Assistant   **2013**

- Researched new ways to harvest solar energy using carbon nanotubes.
- Used Python and MPI with open source APIs to run parallel computations.

ICARE   Rockville, MD

Backend Developer (Freelance)   **2008 - 2011**

- Hosted and maintained MySQL database of clients, interfaced MySQL database with PHP.
- Deployed and hosted internal Wiki using open source API, PmWiki.
- Wrote new Google Maps interface to visualize organization geographically.

NASA   Greenbelt, MD

Intern   **2010**

- Successfully determined angle of misaligned crystal axes in depolarizer with model and presented results.

Army Research Laboratory   Adelphi, MD

Intern   **2009**

- Used X-ray diffraction to characterize quantum well infrared photodetectors (QUIPs).
- Produced report and poster presentation on operation and physics of QUIPs and 32 page introduction to solid state physics.

Projects

Discrete Exterior Calculus   **2013 - 2014**

- Developed new and versatile mesh generation algorithms in Python and C for arbitrary topologies and geometries.
- Parallelized core algorithms from old open source Python library, cached results from computationally expensive routines, and refurbished an outdated open source CULA interface.
- Offloaded computationally expensive linear algebra routines onto GPU.
- Wrote visualization routines for 2D and 3D scalar and vector fields using matplotlib.

High Power Hackery   **2012 - 2014**

- Designed and built Geiger counter from scatch.
- Designed and built 30kV plasma speaker.
- Designed and built X-ray machine.
- Designed and built 2kW arc welder.

Education

University of Maryland, Baltimore County   Catonsville, MD

BS, Physics   **2015**