Charles Cossé

Software R & D

Web Applications Developer ***2017-2018***

Self-employed, Las Cruces NM

- Developing web version of legacy physics analysis software with d3js and dynamic SVG
- Developing neon-themed math scrabble game with d3js and dynamic SVG animation
- NetDispenser: edu-kiosk and free education software incentivizer
- Developed secure, embedded banking platform with Django, Javascript, Docker, Luks
- AWS consulting

Web Applications Developer ***2015-2016***

Ministry of Natural Resources, Georgetown Guyana

- Established centralized GIS data hub for use by all government ministries
- Developed interactive, maps-based website for Protected Areas Commision
- Developed and taught course on GIS programming with Javascript and Django

Entrepreneur ***2013-2015***

Asymptopia Software, Las Cruces NM

- Developed prototype e-learning platform that makes kids earn their internet access. Technologies include: Linux, Raspberry Pi, Apache, Django, Javascript, OpenLayers

Sr. R & D Software Developer ***2000-2013***

Physical Science Laboratory, NMSU

- Real-time 3D fluid dynamics and physics based graphics for Army flight simulators
- Developed platform for transition of validated Army smoke models to OpenGL
- Lead web developer for fielded Army weather toolkit
- Developed real-time wavelet-based video tracking system for Army
- Developed prototype system for passive detection of nuclear contraband
- Physics simulations with New Mexico's Encanto supercomputer
- Simulations and detector design for two international astrophysics collaborations
- Cyber-security and dynamic network visualization projects
- Collaborated with numerous companies, agencies and institutions
- Wrote proposals and helped secure several large contracts

Physics Faculty ***1998-2000***

Francis Marion University, Florence SC

- Taught undergraduate physics and developed interactive physics demonstrations

Graduate Physics Research ***1994-1998***

Particle Astrophysics Laboratory, NMSU

- International Experimental Astrophysics Collaboration
- Developed software tools for real-time physics analysis and visualization

Physics Faculty ***1991-1993***

United States Peace Corps, Kimang'etti Secondary School, Kenya

- Taught physics and math at rural secondary school; traditional dance project

Education

- **PhD Physics**, New Mexico State University ***2004***
  "A measurement of the ground level electron spectrum from 0.1-10 GeV/c"
- **MS Physics**, New Mexico State University ***1998***
  "Cosmic AntiProton Ring Imaging Cherenkov Experiment, CAPRICE"
- **BS Physics**, Fort Lewis College, Durango CO ***1991***

Selected Presentations

- Rendering Real-time Data using Python and Javascript, PDX Code Guild ***2016***
- GIS Web Applications with Javascript, Guyana Geology and Mines Commission ***2016***
- Real-time 3D Navier-Stokes for Obscurant Modelling, Huntsville AL ***2012***
- Frameworks For Physics, USAF Space Weather Directorate, Boston MA ***2008***
- Muon Camera System For Passive Detection of Nuclear Contraband, NMSU ***2006***
- A Work of Nature, SE Section of American Physical Society, Raleigh NC ***1998***

Selected Papers

- Electron Measurements with the High Energy Particle Calorimeter Telescope (NASA-HEPCaT) ***2009*** J.W. Mitchell et al, Proceedings of the 31st ICRC, Lo'dz', Poland
- TheOrbiting Astrophysical Spectrometer In Space (NASA-OASIS) ***2009*** M. Christl, et al., Proceedings of the 31st ICRC, Lo'dz', Poland
- A Measurement of the Ground Level Electron Spectrum from 0.1 - 10 GeV/c ***2004***

Selected Links

- https://beta.observablehq.com/@ccosse
- https://us.pycon.org/2017/schedule/presentation/643/
- http://netdispenser.github.io
- http://ccosse.github.io

Technologies Summary

- **Javascript** ***2006-2018***
  - D3js, SVG, AJAX, Topojson, JSON, OpenLayers, GDAX Bitcoin API, Electron, ES6, Node, JQuery, JQuery Mobile, ThreeJS, Bootstrap, JSRoot
- **Python** ***1999-2018***
  - Python3, Python2, Django, Geonode, PyGame, Jython
- **C++** ***1995-2013***
  - OpenSceneGraph, OpenGL, GEANT4, MPI, wxWidgets, Histoscope, Cernlib
- **Linux** ***1994-2018***
  - AWS, Linode, Supercomputers, Gentoo, Debian, RedHat, SuSE, Ubuntu
- **Other**
  - Apache, Nginx, Flask, Tomcat, Wsgi, Docker, Luks, CSS3, Cyber- Security, WebSockets, Raspberry-Pi, Network Programming, RPC, Databases, C/Make