LCDR Carl A. Pearson, Ph.D.

Contact Information

Emerging Pathogens Institute
University of Florida
P.O. Box 100009
2055 Mowry Road
Gainesville, FL 32610

Cell: (202) 360-9460
Fax: (352) 273-6890
cap10@ufl.edu

Research Interests

Analytical and computational modeling of dynamic systems, and development of software pipelines to improve and promote more widespread use of these models

Education

The George Washington University, Washington, DC

Ph.D., Physics (Jan 2012); M.Phil., Physics (May 2010)

- Thesis Topic: *Complex System Ensemble Analysis*
- Advisers: Professors Chen Zeng (Physics), Rahul Simha (Computer Science)

The Naval Post-Graduate School, Monterey, CA

M.S.E.S, Mechanical Engineering (Apr 2006)

- Thesis Topic: *Nuclear Submarine Reactor and Engineering Spaces Design Study*
- Specialization: Thermal Hydraulics
- Adviser: Dr. G. Hay, Bettis Atomic Power Laboratory

Duke University, Durham, NC

B.S. Mathematics, Physics, Philosophy (minor) (May 2003)

- Physics Independent Study Topic: *Pyroelectric Effect*
- Adviser: Professor Bob Guenther
- Mathematics Independent Study Topic: *Genetic Algorithm Optimization*
- Adviser: Professor Robert Brown

Professional Experience

University of Florida, Emerging Pathogens Institute, Gainesville, FL USA
Postdoctoral Researcher **since Jan 2012**
Supervisor: Burt Singer

Office of Naval Research Reserve Component, Arlington, VA USA
Executive Officer, ex-USS SHADWELL, NRL S&T 117 **Aug 2011-Nov 2014**
Deputy Chief Information Officer **since Jul 2009**
- Software Architect and Developer: **Edison**

Project Lead, STDIO Ghana Course **Oct 2012-present**
Project Coordinator, Automated Imaging Maritime Threat Analysis **2010**
Commanding Officers: CAPT Peter Gamerdinger, USN; CAPT Diane Boettcher, USN; CDR Dan Mirelez, USN; LCDR Alex Jones, USN

Naval Reactors, Washington, DC USA
Engineer, Reactor Systems Division **Mar 2004 to Sep 2008**
- Reactor Lead: Next-Gen Aircraft Carrier, Attack Submarine Retro-fit, Next-Gen Ballistic Missile Submarine, Experimental and Training Prototype Platform
- Supervisors: Group: Robert E. Farber, S.E.S (retired);
  Division: Storm Kauffman, S.E.S (retired)

Engineer, Submarine Fluid Systems Division **Jul 2003 to Mar 2004**
- Fluid Systems Lead, Prototype Reactor and Site Off-Hull Equipment
- Supervisors: Group: Tom Boughner, S.E.S (retired); Gordon Baum (retired);
  Division: CAPT Vic Mortenson, USN(r)

Awards

United States Navy
- Navy-Marine Corps Commendation Medal, 2012, second citation expected Jan 2015
- Reserve Officer Training Corps Scholarship, 1999-2003

The George Washington University
- Chair's Prize for Graduate Research, 2012
- Andrew John Knox Fellowship, 2009-2011

Duke Mathematics Department
- Undergraduate Research Fellowship, 2001

Duke University
- Dean's List, 1999

Grants

NSF/DEB Funding
- RAPID: Understanding and leveraging asymptomatic Infections to control Ebola. Recommended for funding, award of $188,509 over 1 year pending. PI: J.R.C. Pulliam. Role: named postdoctoral researcher.

Publications

Heesterbeek, JAP, RM Anderson, C Dye, K Eames, JC Edmunds, S Funk, DT Hollingsworth, TA House, V Isham, J Lessler, JO Lloyd-Smith, CJE Metcalf, L Pellis, JRC Pulliam, MG Roberts, C Viboud, and the Isaac Newton Institute Infectious Disease Dynamics Group (**CAB Pearson**). (Accepted) Modeling infectious disease dynamics in the complex landscape of global health. *Science*.

CAB Pearson, E Airoldi, and BH Singer. "Challenges to Understanding Covert Groups." *Illuminating Dark Networks: The Study of Clandestine Groups and Organizations*. Ed. Luke Gerdes. Cambridge: Structural Analysis in the Social Sciences Series, Cambridge University Press, *in press*.

CAB Pearson, R Simha, C Zeng. Network Class Superposition Analysis.
PLoS One, 2013.

G. Wang, C. Zeng, R. Wong, R. Simha, H. Chen, **C. Pearson**, and C. Du. Process-driven inference of biological network structure: feasibility, minimality, and multiplicity.
PLoS One, 2012.

Presentations & Posters

JRC Pulliam and **CAB Pearson**. Improving vector-based surveillance for mosquito-borne infections. *Ecological Society of America*. Sacramento, CA. 2014.

CAB Pearson, BH Singer, and D Bright. Simulating Meth Production Networks
Sunbelt XXXIV, St. Pete's Beach, FL. 2014.

RK Borchering, **CAB Pearson**, AT Gilbert, JD Blanton, RM Wallace, and JRC Pulliam. Assessing seasonal drivers of rabies dynamics in three North American carnivore species *Epidemics 4*, Amsterdam, NL. 2013.

CAB Pearson, TJ Hladish. Epidemics on Dynamic, Empirical Networks
Epidemics 4, Amsterdam, NL. 2013.

CAB Pearson. Managing Your Physicist
Minerva Dark Networks Workshop, West Point, NY. 2013.

CAB Pearson, BH Singer, E Airoldi, and E Kao. Detection of Small Covert Networks Embedded in Large Networks
Sunbelt XXXIII, Hamburg, DE. 2013.

JRC Pulliam, **CAB Pearson**, JM Rowland, JS Lord, and BH Singer. Japanese encephalitis virus in Japan: insights from dynamic models
EPI Research Day, Gainesville, FL. 2013.

Teaching Experience

African Institute for Mathematical Sciences (AIMS) Ghana

Introduction to Scientific Computing with Python **Sep 2014**

- Developing syllabus and challenge material for Python
- On-going discussion with students
- Evaluating student performance, overseeing teaching assistant grading
- AIMS Ghana Academic Director: Prince Osei

Office of Naval Research, Global Division

STDIO Ghana Course **Oct 2012 to present**

- Project Lead, Instructor for summer courses in 2013, 2014
  - Running on-going prep for two week intensive course on software development at University of Ghana
  - Responsible for course material on several software engineering and language topics
  - Project Sponsor: Augustus Vogel (Santiago, Chile Office)

The George Washington University, Washington, DC USA

Teaching Assistant **Sep 2008 to May 2009**

- Instructor for PHY-21: SCALE-UP Biologically-inspired Classical Mechanics, Spring Semester 2009
  - Lead Instructor: Professor Mark Reeves
  - Helped run 6 hour in-class guided laboratory and problem-solving session with freshman and sophomore students; developed course materials, and analyzed students.

- Lead Lab Instructor for PHY-22: Introduction to Electricity and Magnetism (Calculus-based), Fall Semester 2008
  - Lead Instructor: Professor Andrei Alexandru
  - Ran 3 hour laboratory where freshman and sophomore undergraduate students complete pedagogical experiments, and 2 hour recitation and problem solving session
  - Coordinated all evaluation (homework, exams, quizzes, etc)

- Lab Instructor for PHY-12: Introduction to Electricity and Magnetism (Algebra-based), Fall Semester 2008
  - Lead Instructor: Professor Anna Micherdzinska
  - Ran 3 hour laboratory where freshman and sophomore undergraduate students complete pedagogical experiments, and 2 hour recitation and problem solving session

Service

Open source contributor to various projects
Officer, United States Navy, since May 2003
Technical Supervisor, Hoof'n'Horn Musical Theater Company, 2000-2003

Technical Skills

Broad experience with scientific and engineering frameworks, including development, use in parallel applications, and coordination with large databases

Programming Skills: Scala, R, Python, Javascript, Perl, Java, C/C++, Pascal, FORTRAN, various SQLs, assorted frameworks and tools (version control systems, IDEs). Web development using various frameworks and preprocessing languages.

Experienced in carpentry, brazing, soldering, welding (stick and inert-gas), and bench-top machining. Some experience with automated machining systems. Some experienced with Computer-Aided Design, Engineering, and Manufacturing.