LCDR Carl A. Pearson, Ph.D.

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

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<small>RESEARCH</small>
<small>INTERESTS</small>

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

<small>EDUCATION</small>

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

<small>PROFESSIONAL</small>
<small>EXPERIENCE</small>

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 Oct 2014 • 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.