

Carlos J. R. Anderson

Department of Biology
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Education

M.S. Biology (In progress)
University of Central Florida
Thesis: Identification of individual polar bears

B.S. Mathematics (2003)
University of Central Florida

B.S. Computer Science (2002)
University of Central Florida

Research Interests

Computational approaches to understanding the complexity of life, especially its origins and evolution (e.g., genetic drift, natural selection, predator-prey and host-parasite interactions, evolutionarily stable strategies, and speciation).

Research Experience

River Network Structure Research Student (June 2004 – Present)

Department of Biology, University of Central Florida
Researched network structure of river systems and implemented a recursive algorithm to analyze connectivity of world rivers based on USGS HYDRO1k database. Currently researching biological impact of dams within fragmented river networks.

Computer-Aided Polar Bear Identification Research Student (April 2004 – Present)

Department of Biology, University of Central Florida
Researched methods for individual identification of animals and analyzed reliability of identifying polar bears by whisker spot pattern variation. Currently designing and implementing a computer-aided identification system for polar bears based on whisker spot pattern recognition.

Military Training Simulation Research Assistant (October 2001 – June 2003)

Institute for Simulation & Training, University of Central Florida
Researched and developed a wavelet-based avatar motion framework. Designed and developed a virtual reality training system for Linux. Implemented a networked application for an optical gesture recognition system.

Computer Science Undergraduate Merit Award Research Student (Fall 1999)

Department of Computer Science, UCF

Researched and experimented with genetic algorithms to address problem of DNA fragment assembly. Explored how various parameter values and crossover operators affected results.

Manuscripts in Prep.

Anderson, C. J. R., D. G. Jenkins, and J. F. Weishampel. Network theory offers a unifying framework for river ecology and management. In prep. for *Ecological Complexity*.

Anderson, C. J. R., J. M. Waterman, and J. D. Roth. Use of whisker spot patterns to identify individual polar bears. In revision for *Journal of Zoology*.

Presentations

High complexity of whisker spot patterns of polar bears permits noninvasive individual identification

Ecological Society of America Annual Meeting
Memphis, TN, August 7, 2006

UCF's MacKay Tract: Prospects for Restoration

Department of Biology Seminar, UCF
Orlando, FL, May 1, 2006

Reliability of identifying individual polar bears using whisker spot patterns

Graduate Research Forum, UCF
Orlando, FL, March 29, 2006

Photo-identification of individual polar bears by whisker spot pattern variation

Southeastern Ecology and Evolution Annual Conference
Tuscaloosa, AL, March 4, 2006

Noninvasive identification of individual polar bears by whisker spot patterns

Society for Integrative and Comparative Biology Annual Meeting
Orlando, FL, January 7, 2006

Rivers of the world are small-world networks

Southeastern Ecology and Evolution Annual Conference
Athens, GA, March 12, 2005

Rivers of the world are small-world networks

Society for Conservation GIS Annual Conference
Shepherdstown, WV, September 27, 2004

Teaching Experience

Grading Assistant, General Biology (Spring 2007)
Grading Assistant, General Biology (Fall 2006)
Teaching Assistant, Population Biology & Evolution (Spring 2006)
Teaching Assistant, General Biology (Fall 2005)
Lecture Assistant, General Biology (Spring 2005)
Teaching Assistant, Computer Science I (Fall 1999)
Teaching Assistant, Pascal Language (Fall 1999)

Honors and Awards

UCF Graduate Travel Fellowship, \$300 (2006)
Delores A. Auzenne Fellowship Recipient, \$5,000 (2006-2007)
Polar Bears International Summer Aid, \$2,500 (2006)
UCF Graduate Research Forum Best in Category Award (2006)
Polar Bears International Summer Aid, \$1,800 (2004)
Magna Cum Laude in B.S. Mathematics, UCF (2003)
Magna Cum Laude in B.S. Computer Science, UCF (2002)
IST Student Researcher of the Year (2001)
Upsilon Pi Epsilon (Computer Science Honor Society)
Computer Science Undergraduate Merit Award, \$500 (1999)
Golden Key National Honor Society
Phi Kappa Phi National Honor Society
Bright Futures Florida Academic Scholarship, \$13,073 (1998-2002)

Academic Activities

Biology Graduate Student Association (2005-Present)
ACM Programming Team (2000-2002)
UCF Astronomy Society (1999-2003)

Service Activities

Website Developer (Fall 2006 – Spring 2007)
Southeastern Ecology and Evolution Conference, Orlando, FL
Developed and maintained conference website and abstract submission system.

Student Helper (January 2006)
Society for Integrative and Comparative Biology Annual Meeting, Orlando, FL
Recorded number of attendees and controlled lighting conditions during presentations.

Contest Judge (May 2001)
UCF Annual High School Programming Contest, Orlando, FL
Wrote solution to contest problem and judged answers from contestants.

Professional Memberships

American Association for the Advancement of Science
Association for Computing Machinery
Society for Integrative and Comparative Biology