Jeffrey West

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EDUCATION

University of Southern California, Los Angeles, California, USA

- Ph.D. in Mechanical Engineering 2014 – 2017
  - **Adviser:** Dr. Paul K. Newton
  - **Thesis:** Computational tumor ecology: a model of tumor evolution, heterogeneity, and chemotherapeutic response
- M.S. in Mechanical Engineering 2012 – 2014

Ohio Northern University, Ada, Ohio, USA

- B.S. in Mechanical Engineering 2008 – 2012

RESEARCH INTERESTS

Computational modeling of cancer tumor progression using evolutionary game theory dynamics to design optimal chemotherapy scheduling.

PUBLICATIONS

PREPRINTS

[11] **J. West**, P.K. Newton, 2017, "Intra-tumor cellular coupling shapes tumor growth: A statistical mechanics mathematical model," *submitted, PNAS*.

[10] E. Kim, R. Schenck, **J. West**, W. Cross, V. Harris, J. McKenna, H. Cho, E. Coker, S. Lee-Kramer, K. Tsai, E. Flores, C. Gatenbee, 2017, "Targeting the Untargetable: Predicting Pramlintide Resistance Using a Neural Network Based Cellular Automata," *Biorxiv*.

[9] **J. West**, Y. Ma, P.K. Newton, 2017, "Capitalizing on Competition: An Evolutionary Model of Competitive Release in Metastatic Castrate Resistant Prostate Cancer Treatment," *submitted, Cancer Research.*

JOURNALS

[8] **J. West**, P.K. Newton, 2017, "Optimizing chemo-scheduling based on tumor growth rates," *to appear: Mathematical Oncology Handbook*.

[7] Y. Ma, **J. West**, P.K. Newton, 2017, "Competitive release in tumors," *to appear: Mathematical Oncology Handbook.*

[6] **J. West**, P.K. Newton, 2017, "Chemotherapeutic dose scheduling based on tumor growth rates provides a case for low-dose metronomic high-entropy therapies," *Cancer Research.* (preprint link)

[5] **J. West**, Z. Hasnain, P.K. Newton, 2016, "The prisoner's dilemma as a cancer model," *Convergent Science: Physical Oncology*.

[4] **J. West**, Z. Hasnain, P.K. Newton, 2016, "An evolutionary model of tumor cell kinetics and the emergence of molecular heterogeneity driving Gompertzian growth," *SIAM Review*.

[3] John-David Yoder, **J. West**, E. Baumgartner, M. Perrollaz, M. Seelinger, M. Robinson, 2013, "Experiments comparing precision of stereo-vision approaches for control of an industrial manipulator," *Spring Tracts in Advanced Robotics Vol. 88 pp 245-256*.

TECHNICAL REPORTS

[2] **J. West**, M. Hromatka, M. Holt, S. Biaz., 2012, "A Fuzzy Logic approach to collision avoidance in smart UAVs," *Technical Report #CSSE12-05, Auburn University*.

[1] **J. West**, P. Ling, P. Grewal, 2010, "Urban Food Production season extension techniques," *Internship Program (ORIP) Technical Report*.

AWARDS

Body Engineering Los Angeles GK-12 Fellowship 2016

Fellows improve their communication, teaching, teamwork, and public outreach skills through active collaboration with master teachers in local middle schools, advancing the education efforts relating to science, technology, engineering and math (STEM) education.

Tau Beta Pi Graduate Fellowship 2012

Awarded on the basis of "high scholarship, strong faculty recommendations, definite extracurricular contributions, unusual promise of substantial achievement through a definite plan or purpose, and a program through which accomplishment will advance the interest of the engineering profession."

CONFERENCE TALKS

Biology and Medicine through Mathematics Conference

- Virginia Commonwealth University, Richmond, VA — May 2017

Integrated Mathematical Oncology Department Talk

- Moffitt Cancer Center, Tampa, FL — May 2017

Center for Applied Molecular Medicine Departmental Seminar

- University of Southern California, Los Angeles, CA — Apr 2017

European Society for Mathematical and Theoretical Biology Conference (ECMTB)

- University of Nottingham, Nottingham, U.K. — Jul 2016

Southern California Applied Mathematics Symposium (SOCAMS)

- Claremont Graduate University, Claremont, CA — Jun 2016

Convergent Science Initiative in Cancer (CSI)

- Scripps Research Institute, La Jolla, CA — Apr 2016

The Kuhn Laboratory (Research Circle Seminar)

- The Bridge@USC, Los Angeles, CA — May 2015

RESEARCH EXPERIENCE

Auburn University, Auburn, Alabama

- Research Intern, Computer Science Department — Jun 2012 – Aug 2012
  - Supervisor: Dr. Saad Biaz
  - UAV Collision avoidance algorithms; ROS; fuzzy logic control;

Ohio Northern University:, Ada, Ohio

- Independent Research, Mechanical Engineering Department — Apr 2012 – Jun 2012
  - Supervisor: Dr. John-David Yoder
  - Robotic arm manipulation; computer vision; error analysis;

University of Southern California, Los Angeles, California

- Research Intern, Computer Science Department — Jun 2011 – Aug 2011
  - Supervisor: Dr. Maja Matarić
  - Human-robot-interaction; ROS; python; state machine controller;

Ohio State University:, Wooster, Ohio

- Research Intern, Ohio Agricultural Research and Development Center — Jun 2010 – Aug 2010
  - Supervisor: Dr. Peter Ling
  - Local food production; growing season extension; energy storage; community gardens;
- Research Intern, Ohio Agricultural Research and Development Center — Jun 2009 – Aug 2009
  - Supervisor: Dr. Peter Ling
  - Machine vision; error analysis; crop yield prediction;
  - Best Undergraduate Intern Summer Research Award

TEACHING

Courses

- USA 101: The United States: An American Cultures Series — Fall 2012, 2013, 2014

Lectures

- AME 526, Engineering Analytical Methods — February 9, 2015
- AME 341b, Compressible Flow Dynamics — April 7, 2014
- AME 341b, Compressible Flow Dynamics — April 1, 2013

Teaching Assistantships

- AME 525: Engineering Analytical Methods I — Fall 2015
- AME 526: Engineering Analytical Methods II — Spring 2015
- AME 341b: Mechoptronics, Laboratory Part B — Spring 2013, 2014
- AME 341a: Mechoptronics, Laboratory Part A — Fall 2012, 2014

Engineering Mentoring

- Viterbi Graduate Mentorship Program — Spring 2016
- Viterbi Undergraduate Merit Researcher Program, 3 mentees — 2013 – 2015

SKILLS, PROJECTS

High Performance Computing: C/C++

- Developed hybrid MPII + OpenMP Fork & Join process to scale stochastic coevolutionary dynamics model of primary tumor growth to large cell numbers (see http://jeffreybwest.com/cv/highPerformanceComputing.pdf)

iOS Application: Objective C

- Developed iOS application based on a two-player extension of Conway's Game of Life. (see https://itunes.apple.com/us/app/celluwar-the-game-of-life/id1144234863?mt=8)

Web Development: Javascript, d3.js

- Developed web application to track time distribution of a typical day in life, in a visually pleasing and interactive d3.js framework. (see https://jeffreywest.github.io/creative-clock/)

Mobile Bot Development: Javascript, Node JS

- Developed Facebook messenger bot to serve a random article from my blog's RSS feed to all who message the blog's public Facebook page. (see the process I used outlined here: https://gapp.usc.edu/viterbipulseblog/westjb/how-i-built-facebook-messenger-bot-30-minutes-part-1)