

Karly Jacobsen

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SUMMARY

Expertise in mathematical theory, modeling and analysis. Solid fundamentals in programming, data manipulation and visualization. Background in materials science engineering. Proven skills in problem-solving, collaboration, leadership, and communication. Self-directed learner with high attention to detail and record of success.

EDUCATION

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| Ph.D. Mathematics | May 2013 |
| UNIVERSITY OF FLORIDA Gainesville, FL | GPA 4.00 |
| M.S. Mathematics | May 2010 |
| UNIVERSITY OF FLORIDA Gainesville, FL | GPA 4.00 |
| B.S. Materials Science & Engineering | May 2007 |
| UNIVERSITY OF FLORIDA Gainesville, FL | GPA 4.00 |

EXPERIENCE

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| Ohio State University: Mathematical Biosciences Institute | 2013 – present |
| <i>Postdoctoral fellow</i> | Columbus, OH |
| <ul style="list-style-type: none">• Collaborated on five interdisciplinary modeling projects with mathematicians, statisticians, and clinicians• Formulated mathematical models with healthcare applications including epidemic control and cancer therapy• Developed statistical theory for a continuous-time Markov chain model for epidemic spread on a network• Pioneered a novel clustering algorithm and network centrality metric to improve analysis of epidemic risk• Analyzed various datasets for model validation and estimated model parameters by numerical optimization• Effectively communicated results in four research publications and over 20 presentations to diverse audiences | |
| University of Florida: Department of Mathematics | 2008 – 2013 |
| <i>Fellow, research assistant, teaching assistant, course coordinator</i> | Gainesville, FL |
| <ul style="list-style-type: none">• Constructed the first predictive model for an innovative tumor therapy and developed simulation algorithm• Built and analyzed an ODE model to provide insight on the agricultural management of a citrus disease• Effectively taught 19 undergraduate mathematics course sections with class sizes from 16 to over 200• Managed team of course instructors, spearheaded curriculum redesign and authored a royalty-generating textbook supplement for the AIM Mathematics Program | |
| University of Florida: Biomaterials Center | 2005 – 2007 |
| <i>Undergraduate research assistant</i> | Gainesville, FL |
| <ul style="list-style-type: none">• Synthesized and characterized DNA microspheres for optimal drug uptake during intratumoral chemotherapy• Performed statistical analysis of microsphere particle size data using SigmaStat software | |

INDUSTRY EXPERIENCE

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| Johnson & Johnson Vision Care | June – August 2006 |
| <i>Intern, Process and product development engineer</i> | Jacksonville, FL |
| <ul style="list-style-type: none">• Developed test method and collected hydrogel swelling data for contact lens processing• Analyzed data, presented results and actively participated in project team meetings with process engineers | |

SKILLS & COURSES

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|-----|--------|------------------------|--------------------|--------------------------------|
| R | Matlab | Numerical optimization | Probability theory | Applied differential equations |
| Git | LaTeX | Parameter estimation | Stochastic models | Statistical learning |

PUBLICATIONS

- K. Jacobsen**, M. Burch, J. Tien and G. Rempala. *The large graph limit of a stochastic epidemic model on a dynamic multilayer network*. Submitted to J. Math. Biol.
- M. Burch, **K. Jacobsen**, J. Tien and G. Rempala. *Network-based analysis of a small Ebola outbreak*. Math. Biosci. (in press).
- K. Jacobsen**, L. Russell, B. Kaur and A. Friedman. 2015. *Effects of CCN1 and macrophage content on glioma virotherapy: A mathematical model*. Bull. Math. Biol. (77): 984-1012.
- K. Jacobsen** and S. S. Pilyugin. 2015. *Analysis of a mathematical model for tumor therapy with a fusogenic oncolytic virus*. Math. Biosci. (270): 169-182.
- K. Jacobsen**, J. Stupiansky, and S. S. Pilyugin. 2013. *Mathematical modeling of citrus groves infected by huanglongbing*. Math. Biosci. Eng. 10 (3): 705-728.

SELECT PRESENTATIONS

- Ebola outbreaks and the mathematics of networks*. Big Data Jax Meetup, Jacksonville, FL. June 2016.
- A modeling framework for an epidemic with multiple modes of transmission on a dynamic network*. University of Pittsburgh, Applied Mathematics Seminar, Pittsburgh, PA. March 2016.
- Residence time and epidemics on networks*. University of Florida, Biomathematics Seminar, Gainesville, FL. March 2015.
- Modeling disease spread on networks with a new notion of distance*. Ohio Wesleyan University Science Lecture Series, Delaware, OH. January 2015.
- Modeling the effects of macrophage content and CCN1 on glioma virotherapy*. Mathematical Biosciences Institute, Cancer and the Immune System Workshop, Columbus, OH. November 2014.
- The role of CCN1 in glioma virotherapy with oncolytic herpes simplex virus*. European Conference on Mathematical and Theoretical Biology, Gothenburg, Sweden. June 2014.
- Chronic myeloid leukemia: who can cease TKI treatment?* Moffitt Cancer Center, Integrated Mathematical Oncology Personalized Medicine Workshop, Tampa, FL. November 2013.

AWARDS

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| Graduate Student Teaching Award | <i>University of Florida Department of Mathematics</i> | 2012 |
| Best Poster Award | <i>African Institute for Mathematical Sciences modeling workshop</i> | 2012 |
| Eleanor Ewing Ehrlich Award | <i>Outstanding female graduate student in mathematics</i> | 2011 |
| Grinter Fellow | <i>University of Florida Department of Mathematics</i> | 2008 |
| Alpha Sigma Mu National Scholar | <i>Single nationwide recipient from materials science honor society</i> | 2006 |

LEADERSHIP

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| Organizer | Mathematical Biosciences Institute Professional Development Seminar | 2014 – 2015 |
| MBI Representative | Field of Dreams Conference, Mesa, Arizona | 2014 |
| Treasurer and mentor | University of Florida Graduate Mathematics Association | 2012 |
| President | University of Florida Chapter of Alpha Sigma Mu | 2006 – 2007 |
| Co-vice president | University of Florida Chapter of Habitat for Humanity | 2003 – 2006 |

TRAINING & WORKSHOPS

- Modeling the Spread and Control of Ebola in West Africa*. Atlanta, GA. January 2015.
- Cancer and the Immune System*. Mathematical Biosciences Institute, Columbus, OH. November 2014.
- Parameter Estimation for Dynamic Biological Models*. National Institute for Mathematical and Biological Synthesis, Knoxville, TN. May 2014.
- Integrated Mathematical Oncology Personalized Medicine*. Moffitt Cancer Center, Tampa, FL. November 2013.
- Mathematical Methods in Systems Biology and Population Dynamics*, African Institute for Mathematical Sciences, Cape Town, South Africa. January 2012.