

# Nazanin Zaker

(613) 400-9049

## Data Analyst

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## PROFESSIONAL EXPERIENCE

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### Part-time Professor (University Instructor)

Jan. 2019 – Present

Department of Mathematics and Statistics, University of Ottawa, ON

- Developing and delivering engaging lectures to more than 200 undergraduate students in various courses in mathematics such as Mathematical Methods, Calculus for Life Science, Calculus I, and Calculus II, some in class and some online.
- Planning, evaluating, and revising course content and course materials.
- Lecturing and communicating effectively with students from diverse backgrounds.
- Connecting students' coursework to real-world themes by bringing in a variety of examples in course material that bridge business and economics to mathematics.
- Honing written and communication skills through teaching hundreds of students.

### Data Analyst (Part-time)

Jul. 2019 – Mar 2021

Interactive Studios, Ottawa, ON

- Gathered and analyzed data from digital screens in shopping malls that were originally stored in MySQL database.
- Assisted in building analytic tools to manage data and streamline data analysis using Python and R.
- Conducted detailed analysis and research through real-time visualization tools such as Tableau, Python, and R to provide business insights to assist the project manager with the successful implementation of projects.
- Ensured provision of appropriate analytical support and outcome recommendations for key stakeholders.
- Examined documents and reports and presented findings in PowerPoint and Excel.

### Research Assistant (Mathematical Ecology)

University of Ottawa, ON

Sep. 2016 – Oct. 2021

University of Glasgow, Scotland

Feb. 2020 – Mar. 2020

- Collected data and conducted detailed data analysis to model the problem and to identify variations and trends.
- Researched about how to model population dynamics via reaction-diffusion equations in a heterogeneous landscape with a discontinuity at the interface, and then proved the existence and uniqueness of solutions by semigroup theory.
- Researched about the steady-state problem of the time-dependent model and proved the existence and uniqueness of positive, asymptotically stable steady-state solutions.
- Researched about the system of predator-prey model and cyclic population.
- Studied Turing-pattern formation on patchy landscapes to analyze diffusion-driven instability conditions by using the technique of homogenization to derive spatially homogeneous equations.
- Illustrated the results with statistical analysis and numerical simulations in MATLAB and R.
- Collaborated with team members to discuss the results of the research.

## EDUCATION

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### Ph.D. in Applied Mathematics (Mathematical Ecology)

Sep. 2016 – Oct. 2021

University of Ottawa, ON

Supervisor: Frithjof Lutscher

Thesis: Population dynamics in patchy landscapes: steady states and pattern formation

### Academic Research Opportunity

Feb. 2020 – Mar. 2020

University of Glasgow, Scotland

Supervisor: Christina Cobbold

Nazanin Zaker

**M.Sc. in Applied Mathematics (Game Theory)**

Sep. 2011 – Feb. 2014

University of Tehran, Iran

Supervisor: Mehdi Reza Darvishzadeh

Thesis: A cooperative stochastic differential game and management of trans-boundary industrial solution

**B.Sc. in Applied Mathematics**

Sep. 2007 – Jul. 2011

University of Tehran, Iran

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**SKILLS**

- Python (NumPy, Pandas, Matplotlib, Seaborn)
- R studio
- Tableau
- SQL
- MATLAB/GNU Octave
- Platforms: Linux/ Windows
- Mathematica
- Microsoft Office Suite: Excel, PowerPoint, Word, Outlook, and SharePoint
- LaTeX
- Applied Mathematics/ Mathematical modeling
- Analyzing data
- Data visualization
- Statistics modeling

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**PEER-REVIEWED PUBLICATIONS**

- N. Zaker, L. Ketchemen, and F. Lutscher. The effect of movement behavior on population density in patchy landscapes. *Bulletin of Mathematical Biology*, 2019, 82(1): 1.
- N. Zaker, C. A. Cobbold, and F. Lutscher. The effect of landscape fragmentation on Turing-pattern formation. *Mathematical Biosciences and Engineering*, 2022, 19(3): 2506-2537.

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**PRESENTATIONS**

**The effect of landscape fragmentation on Turing pattern formation**

The Society for Mathematical Biology Annual Meeting (SMB), June 2021

The Second Joint SIAM/CAIMS Annual Meeting (AN20), July 2020

**The effect of movement behavior on population density in patchy landscapes**

The Canadian Society of Applied and Industrial Mathematics Annual Meeting (CAIMS), June 2021

The Canadian Mathematical Society (AARMS – CMS Student Poster Session), June 2020

The Society for Mathematical Biology Annual Meeting (SMB), July 2019