

# YIDAN (EDEN) XU

+1 (206)409-9027 ◇ yx2516@uw.edu  
3927 Adams Lane NE,  
Seattle, WA 98105

## EDUCATION

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### University of Washington, Seattle, USA

*MS in Statistics*

2019 - Present  
*Current GPA 3.9*

2020 Spring:

- Statistical Computing, Measure Theory, Convex Analysis and Nonsmooth Optimization, Special Topics in Biostatistics: Spatial-Temporal Statistics

2020 Winter:

- Kernel Method; Stochastic Modelling: Model based Geostatistics and GMRF

2019 Autumn:

- Statistical Theory of Machine Learning; Statistical Inference; Markov Chains and Graphical Models

### Imperial College London, UK

*BSc in Mathematics with Statistics (3YFT)*

2016 - 2019  
*GPA 4.0*

- Relevant Courses:
- Real/Complex Analysis, Scientific Computing, Time Series, Applied Probability, Stochastic Simulation, Finite Elements: Analysis and Implementation, Statistical Modelling
- 3rd Year Dean's List, top 10% of the year.

## AWARDS

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- **Mary Lister McCammon Research Fellowship:** Awarded to 14 female undergraduate students in Mathematics and Statistics around UK.
- **Winton Capital Prize in Mathematics:** Awarded to best second year's group projects in Math Department, 3 out of 46.
- **BP Undergraduate Research Opportunities Project Awards:** Awarded to students undertaking UROP project at Imperial College, 1 in every department.

## PROJECTS

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### Aggregated Log-Gaussian Cox Process:

#### Extending Spatial Point Process to Areal Data Modelling

*Prof. Seth Flaxman, Mary Lister McCammon Research Fellowship*

June - October 2019  
*Imperial College, UK*

- The project entails scalable Bayesian machine learning methods for spatial point process with aggregated count data in R using Stan and INLA.
- Employed Kernel mean embedding as Covariance function for modelling areal relevance between two geographic entities of the same level.
- Implemented Contiguous-block cross validation for length-scale selection and model comparison of existing areal models in the literature.
- Conducted simulation study for exploring the assumption violation of the continuous ground truth of latent spatial risk surface. Implemented with Sub-Saharan HIV prevalence data and UK PBC data.

### Assessing Lending and Borrowing Profile in Rural Pakistan

*Prof. Anthony Bellotti, Undergraduate Research Opportunities Programme*

July - October 2018  
*Imperial College, UK*

- Conducted post-selection inference in R to identify and explain patterns hidden in rich data of household demographic, credit and agriculture portfolio.
- Implemented Lasso with Tweedie family GLM for feature selection.
- Performed redescriptive data mining to identify common groups of households sharing distinct sets of attributes.

**Rook Polynomial Generation Algorithms and Implementation***Dr Lynda White, Second Year Final Project*May - June 2018  
*Imperial College, UK*

- Reviewed Rook polynomial, a generating function for Enumerations that generalises Derangements.
- Improved the Cell Decomposition algorithm, which produces the polynomial, by incorporating a heuristic approach to automate chessboard partitioning via bipartite graph.
- Implemented the revised algorithm in Python and gave a 10 minutes presentation.

**Urban Retail System: Locate New Air Delivery Centre in London***Prof. Mark Girolami, Poster Project*May - June 2017  
*Imperial College, UK*

- Studied Stochastic Spatial Interaction Model with London commercial activity data to analyse dynamics and long-term behaviour of the retail system affected by the installation of a Air Delivery Centre.
- Implemented Dynamical modelling with the principle of maximum entropy on the stochastic system, which is constrained for attractiveness of retail entities.
- Experimented with location optimisation in pursuit of maximising revenue and long-term survival.

**VOLUNTEERING**

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**KDD2018***Student Volunteer*

August 2018

**London African Healthcare Hackathon**

April 2018

- Worked in a diverse team of eight to produce a technology-centred solution for challenge proposed by MSF, with a focus on improving resource allocation under disaster scenario in Africa.

**Raincatcher Imperial, Student-led Charity***Secretary, Member of Committee*June 2017 - June 2018  
*Imperial College, UK*

- Organised social campaigns and fund-raising events to promote water related projects in Tanzania and raise public awareness for water scarcity. Collaborated with Tanzania NGO to negotiate and manage progress of summer project.

**SKILLS**

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**Programming Language**  
**Tool & Framework**R(Proficient), Python(Proficient), MATLAB, C  
Stan, INLA, Pytorch, L<sup>A</sup>T<sub>E</sub>X, Tableau