Saifuddin (Saif) Syed

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Date of Birth	July 28, 1992
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November 14, 2022

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Education

2022 – **Postdoctoral Researcher**. *University of Oxford, Department of Statistics.*
Supervised by Arnaud Doucet.
Computational statistics and machine learning group (OxCSML).
Funded by the CoSInES project.

2022 – 2022 **PhD in Statistics**. *University of British Columbia, Department of Statistics.*
Supervised by Alexandre Bouchard-Côté.
Thesis: "Non-reversible parallel tempering on optimized paths".

2014 – 2016 **MSc in Mathematics.** *University of British Columbia, Department of Mathematics.*
Supervised by Ed Perkins.
Thesis: "Spatial diffusions with singular drifts: The construction of super Brownian motion with immigration at unoccupied sites".

2010 – 2014 **BMath in Mathematics.** *University of Waterloo, Faculty of Mathematics.*
Double major in pure mathematics and applied mathematics.
Graduated with distinction on the Dean's honours list.

Other Academic Affiliations

2022 – **CoSInES project**. *United Kingdom.*
Collaboration of researchers across the UK doing research in COmputational Statistical INference for Engineering and Security.

2022 – **ngEHT Collaboration**. *International.*
Member of the Algorithms and inference working group for the Next-Generation Event Horizon Telescope.

Publications

[1] Nikola Surjanovic, **Saifuddin Syed**, Trevor Campbell, and Alexandre Bouchard-Côté. "Parallel tempering with a variational reference" (2022), arXiv:2206.00080.
Accepted in the Conference on Neural Information Processing Systems (NeurIPS).

[2] Trevor Campbell, **Saifuddin Syed**, Chiao-Yu Yang, Michael I. Jordan, and Tamara Broderick. "Local exchangeability." (2022), arXiv:1906.09507.
Accepted in Bernoulli.

[3] **Saifuddin Syed***, Vittorio Romaniello*, Trevor Campbell, and Alexandre Bouchard-Côté. "Parallel tempering on optimized paths" (2021), arXiv: 1905.02939.
International Conference on Machine Learning (ICML), PMLR 139:10033-10042, 2021.

[4] **Saifuddin Syed**, Alexandre Bouchard-Côté, George Deligiannidis, and Arnaud Doucet. "Non-reversible parallel tempering: a scalable highly parallel MCMC scheme" (2021), arXiv:1905.02939.
Journal of the Royal Statistical Society (Series B), DOI:10.1111/rssb.12464.

* *denotes equal author contribution (shared first-authorship).*

Work in preparation

[1] "Optimal tuning of annealed importance sampling and sequential Monte Carlo samplers."
Collaborators: Kevin Chern, Alexandre Bouchard-Côté, and Arnaud Doucet.

[2] "A geometric comparison of annealing algorithms."
Collaborators: Alexandre Bouchard-Côté, and Arnaud Doucet.

[3] "Particle Filters with the Event Horizon Telescope."
Collaborators: Arnaud Doucet, Paul Tiede.

[4] "Denoising diffusion image priors for Event Horizon Telescope."
Collaborators: Arnaud Doucet, Yuyang Shi, and Paul Tiede.

[5] "Mixing times for non-reversible parallel tempering."
Collaborators: Trevor Campbell, Alexandre Bouchard-Côté, and Nikola Surjanovic.

Prizes, Scholarships and other Honours

2022	ISBA 2022 World Meeting Travel Award.
2021	Marshall Prize.
2017 – 2021	UBC Four Year Fellowships (FYF) For PhD Students.
2020	NeurIPS Top Reviewer (Top 10%).
2017 – 2020	NSERC Canada Graduate Scholarship Doctorate Award (CGS-D).
2017 – 2020	UBC Faculty of Science Graduate Award.
2017	Anona Thorne and Takao Tanabe Graduate Entrance Scholarship in Statistics.
2015 – 2016	NSERC Alexander Graham Bell Canada Graduate Scholarship (CGS-M).
2010 – 2014	Queen Elizabeth II Aiming for the Top Scholarship.
2010 – 2014	University of Waterloo Math Faculty Dean's Honours List.
2013	NSERC Undergraduate Student Research Award (USRA).
2011	University of Waterloo Research Award.
2011	University of Waterloo President's Scholarship.

Teaching Experience

2022 **Teaching Assistant**. *University of Oxford, Sommerville College.*
Probability theory.

2018 – 2021 **Teaching Assistant**. *University of British Columbia, Department of Statistics.*
STAT 547C, Topics in probability for statistics.
Duties: Office hours, grading, and guest lectures.

2013 – 2021 **Private Math Tutor**. *Self-employed.*
Privately tutored 100+ unique students one-on-one with 2-5 regular clients per term.
Courses ranged from first year calculus to graduate complex analysis.

2015 – 2016 **Recitation Instructor**. *University of British Columbia, Department of Mathematics.*
MATH 100V/101V, Differential/Integral Calculus (Vantage College).
Taught one section of approximately 25 students for 2 terms.
Duties: lecturing, managing office hours, and 4 teaching assistants.

2015 **Instructor**. *University of British Columbia, Department of Mathematics.*
MATH 105, Integral calculus for commerce and social sciences.
Taught one section of approximately 80 students for 1 term.
Duties: lecturing, creating assignments, managing office hours, a teaching assistant.

2015 **Workshop Instructor**. *Beat Your Course Inc.*
Led exam review workshops in differential equations, and multivariate calculus.

2014 – 2015 **Instructor**. *BrainBoost Education.*
Taught Grade 5-12 students with learning disabilities (e.g. autism, dyslexia, etc).

2014 **Teaching Assistant**. *University of British Columbia, Department of Mathematics.*
MATH 220, Mathematical proof.
Math learning centre tutor.

Relevant Experience and Service

2023 **Workshop Organizer**, *Black Hole Initiative, Harvard University.*
"Algorithms and inference for the Next-Generation Event Horizon Telescope."
Goal: Create collaborations between AI methods researchers and the ngEHT.

2023 **Workshop Organizer**. *CoSInES + Bayes4Health, University of Warick.*
"Optimal transport masterclass."
Goal: Outline recent research using optimal transport for Monte Carlo methods.

2022 – **Seminar Organizer**. *CoSInES seminar.*
Bi-weekly seminar series to showcase international computational statistics research.

2020 – **Reviewer**. *Statistics and Computing.*

2020 **Reviewer**. *Biometrika.*

2020 **Reviewer**. *Conference on Neural Information Processing Systems (NeurIPS).*

2018 **Reviewer**. *Association for Uncertainty in Artificial Intelligence (UAI).*

2012 – 2014 **General Manager & Co-editor-in-chief**. *Waterloo Math Review (WMR).*
The WMR was a Canada-wide journal to showcase undergraduate math research.
Duties: Manage submissions, reviewers, design journal, and distribute across Canada.

2013 **Research Assistant**. *University of Waterloo, Department of Pure Mathematics.*
Supervised by Spiro Karigiannis.

2012 **Actuarial Analyst Intern**. *Desjardins General Insurance Group.*
Completed P/1 and FM/2 exams from the Society of Actuaries.

2011 **Research Assistant**. *University of Waterloo, Department of Pure Mathematics.*
Supervised by Kevin Hare.

Talks

2023 **Bayes Comp 2023**. *Levi, Finland.*
(Upcoming Invited Conference) "Geometric tuning of SMC Samplers."

2022 **CMStatistics 2022**. *London, UK.*
(Upcoming Invited Conference) "Parallel tempering with a variational reference."

NeurIPS 2022. *New Orleans, USA.*
(Upcoming Invited Poster) "Parallel tempering with a variational reference."

Harvard University Black Hole Initiative. *Cambridge, United States.*
(Invited Seminar) "Non-reversible parallel tempering and the EHT."

ISBA 2022 World Meeting. *Montreal, Canada.*
(Invited Conference) "Non-reversible parallel tempering."

University of Montreal Department of Statistics. *Montreal, Canada.*
(Invited Seminar) "Non-reversible parallel tempering on optimized paths."

University of Oxford OxCSML Seminar. *Oxford, UK.*
(Invited Seminar) "Non-reversible parallel tempering on optimized paths."

CoSInES Seminar. *Remote.*
(Invited Seminar) "Non-reversible parallel tempering."

Queensland University of Technology. *Remote.*
(Invited Seminar) "Non-reversible parallel tempering on optimized paths."

UBC Department of Statistics. *Remote.*
(Invited Seminar) "Non-reversible parallel tempering on optimized paths."

Simon Fraser University Department of Statistics. *Burnaby, Canada.*
(Invited Seminar) "Non-reversible parallel tempering on optimized paths."

2021 **MCM 2021**. *Remote.*
(Contributed Conference) "Parallel tempering on optimized paths."

ICML 2021. *Remote.*
(Invited Poster) "Parallel tempering on optimized paths."

ISBA 2021 World Meeting. *Remote.*
(Contributed Conference) "Parallel tempering on optimized paths."

Riskfuel Analytics Inc. *Remote.*
(Invited Seminar) "Parallel tempering on optimized paths."

2020 **CAIDA: BC's AI Showcase**. *Remote.*
(Contributed Poster) "Non-reversible parallel tempering."

MURI Seminar. *Remote.*
(Invited Seminar) "Non-reversible parallel tempering."

2019 **University of Bristol Department of Mathematics**. *Bristol, UK.*
(Invited Seminar) "Non-reversible parallel tempering: scaling and optimality."

CMStatistics 2019. *London, UK.*
(Invited Conference) "Non-reversible parallel tempering."

University of Oxford OxCSML Seminar. *Oxford, UK.*
(Invited Seminar) "Non-reversible parallel tempering."

MCM 2019. *Sydney, Australia.*
(Invited Conference) "Non-reversible parallel tempering: scaling and optimality."

1QBit Information Technologies Inc. *Vancouver, Canada.*
(Invited Seminar) "Non-reversible parallel tempering: scaling and optimality."

Microsoft Research. *Redmond, USA.*
(Invited Seminar) "Optimal scaling of parallel tempering."

2018 **UBC/SFU Joint Statistics Seminar**. *Vancouver, Canada.*
(Contributed Conference) "Scaling laws of parallel tempering."

SSC 2018 Annual Meeting. *Montreal, Canada.*
(Contributed Conference) "Scaling laws of parallel tempering."