Nathan King | Curriculum Vitae

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nathandking

Education

Dec 2024 (expected)	PhD in Computer Science *University of Waterloo*	Supervisors: Christopher Batty Steven Ruuth
May 2015	MSc in Applied and Computational Mathematics *Simon Fraser University*	Supervisor: Steven Ruuth
May 2013	BSc (Hons.) in Applied Mathematics and Physics *Memorial University of Newfoundland*	Supervisor: Ronald Haynes

Experience

June 2023–Nov 2023	**Research Scientist Intern** at Meta *Reality Labs Research*
Sept 2018–Dec 2022	**Teaching Assistant** at University of Waterloo *Cheriton School of Computer Science*
Aug 2021–Feb 2022	**Research Intern** at Meta *Reality Labs Research*
May–Dec 2020	**Sessional Instructor** at University of Waterloo *Cheriton School of Computer Science*
Mar–Aug 2018 May–Aug 2015	**Research Assistant** at Simon Fraser University *Department of Mathematics*
Mar 2016–June 2018	**Research Scientist** at Rutter Inc. *Department of Research and Development*
May–Aug 2013 May–Aug 2012	**Research Assistant** at Memorial University of Newfoundland *Department of Mathematics and Statistics*

Scholarly Contributions

Publications

1 . **Nathan King**, Haozhe Su, Mridul Aanjaneya, Steven Ruuth, and Christopher Batty — June 3, 2024
"A closest point method for PDEs on manifolds with interior boundary conditions for geometry processing."
Transactions on Graphics

2 . **Nathan King** and Steven Ruuth — Mar 2, 2017
"Solving variational problems and partial differential equations that map between manifolds via the closest point method."
Journal of Computational Physics

Conference Talks	3 . "Surface partial differential equations with interior constraints" FoieGraph, *Universite de Montreal*	Nov 11, 2022
	4 . "Intersections with discrete closest point surfaces" GRAPHQUON, *McGill University*	Dec 10, 2020
	5 . "Real-time detection of stationary and moving marine radar targets" NL Electrical and Computer Engineering Conference *IEEE Newfoundland and Labrador Section*	Nov 15, 2017
	6 . "The closest point method for manifold mapping" Conference on Imaging Science *Society for Applied and Computational Mathematics*	May 23, 2016
Invited Talks	7 . "A closest point method for PDEs on manifolds with interior boundary conditions for geometry processing" School of Computer Science Seminar Series *University of Waterloo*	Feb 27, 2024
	8 . "A closest point method with interior boundary conditions for geometry processing" SFU Applied and Computational Math Seminar *Simon Fraser University*	Mar 24, 2023
	9 . "Closest point method with interior constraints" School of Computer Science Seminar Series *University of Waterloo*	Aug 12, 2021
	10 . "The closest point method for manifold mapping" PIMS-CSC Seminar *Simon Fraser University*	Mar 18, 2016
	11 . "The closest point method for manifold mapping" Applied and Computational Mathematics Seminar *Memorial University of Newfoundland*	Jan 15, 2016
	12 . "The closest point method" Applied and Computational Mathematics Seminar *Memorial University of Newfoundland*	Nov 6, 2015
Code	13 . C++ code for PDEs on manifolds with interior boundary conditions	June 12, 2024
	14 . C++ code for the closest point method for PDEs on surfaces	Feb 18, 2022
	15 . Matlab code for computing harmonic maps between surfaces	Jan 22, 2021
	16 . Matlab code for interpolation with quadratic curves and patches	Jan 19, 2021
	17 . Matlab code for image compression	Sept 23, 2014
	18 . Matlab code for image segmentation	Sept 23, 2014
	19 . Matlab code for the numerical solution of blow-up PDEs	Sept 23, 2014

Leadership

Sept 2019–Aug 2022	**Treasurer**, Math Graduate Student Association *University of Waterloo*
Oct 2017–Apr 2018	**Committee Member**, Eastern Newfoundland Science Fair *Newfoundland School District*
Nov 2013–2014	**Treasurer**, SIAM Student Chapter *Simon Fraser University*
May 2012–Apr 2013	**President**, Physics and Physical Oceanography Society *Memorial University of Newfoundland*

Volunteering

Aug 2020	**Student Volunteer**, SIGGRAPH 2020 *ACM, Virtual Conference*
Oct 2017	**Proctor**, IEEEXtreme Programming Competition 11.0 *IEEE, Memorial University of Newfoundland*
July 2013	**Assistant**, Shad Valley Summer Camp *Memorial University of Newfoundland*
Apr 2012 & 2013	**Judge**, Eastern NL Science & Technology Fair *NL School District*

Skills

Languages	C++, Matlab, Python, LaTeX
Technologies	Eigen, OpenGL, OpenMP, SIMD instructions
Other Experience	Blender, CUDA, Fortran, shell scripting, Mathematica, Maple

Student Mentorship

July 2021–Oct 2022	Tümay Özdemir, Masters, University of Waterloo (with Christopher Batty)
Jan–May 2021	Umar Ahmed, Undergraduate, University of Waterloo (with Christopher Batty)
Sept–Dec 2020	Haocheng Chang, Undergraduate, University of Waterloo

Conferences

Nov 2022	FoieGraph	Virtual
2020, 2021, 2022	ACM Symposium on Computer Animation	Virtual
2020, 2021, 2022	ACM SIGGRAPH	Virtual
2020, 2021, 2022	ACM Symposium on Geometry Processing	Virtual
Dec 2020	GRAPHQUON	Virtual
Apr 2018	IEEE Radar Conference	Oklahoma City, OK
Nov 2017	Newfoundland Electrical and Computer Engineering Conference	St. John's, NL
May 2017	IEEE Radar Conference	Seattle, WA
May 2016	SIAM Conference on Imaging Science	Albuquerque, NM

Achievements

Jan 2024–Dec 2024	Ontario Graduate Scholarship	UW
Jan 2024–Dec 2024	President's Graduate Scholarship	UW
Jan 2023–Dec 2023	QEII Graduate Scholarship in Science & Technology	UW
Jan 2023–Dec 2023	President's Graduate Scholarship	UW
Jan 2022–Dec 2022	QEII Graduate Scholarship in Science & Technology	UW
Jan 2022–Dec 2022	President's Graduate Scholarship	UW
Sept 2018–Aug 2020	Mathematics Domestic Doctoral Scholarship	UW
Sept–Dec 2015	Provost Prize of Distinction	SFU
Sept–Dec 2015	Special Graduate Entrance Scholarship	SFU
Sept 2015–Apr 2016	Postgraduate Scholarship Doctoral	NSERC
May 2013–2014	Canadian Graduate Scholarship Masters	NSERC
May–Aug 2014	Graduate Fellowship	SFU
Sept–Dec 2013	Special Graduate Entrance Scholarship	SFU
May–Aug 2013	Undergraduate Student Research Award	NSERC
May 2013	Lou Visentin Award	MUN
May–Aug 2012	Undergraduate Student Research Award	NSERC