

Bhathiya Rathnayake

📍 San Diego, CA ✉ brm222@ucsd.edu ☎ +1 (518) 596 5193 📄 Publications in LinkedIn

EDUCATION

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| University of California San Diego <i>PhD in Intelligent Systems, Robotics, & Control, GPA: 3.85/4.0</i> | Jul 2022 – Jun 2025 <i>San Diego, CA</i> |
| Rennselaer Polytechnic Institute <i>MS in Computer & Systems Engineering, GPA: 3.89/4.0</i> | Jan 2020 – May 2022 <i>Troy, NY</i> |
| University of Peradeniya <i>BSc in Electrical & Electronic Engineering, GPA: 3.65/4.0</i> | Jan 2014 – Oct 2017 <i>Sri Lanka</i> |

TECHNOLOGIES

Control Systems: PDE System Modeling, Non-linear Control, Adaptive Control, Model Predictive Control, Observers
Robotics: Reinforcement Learning, Optimization, State Estimation, SLAM, Motion Planning
Data Analysis: Probabilistic Modeling, Statistical Methods
Electrical Engineering: Analog Circuits, Power Electronics
Languages: Matlab/Simulink, Python, C++
Frameworks: TensorFlow, Keras, PyTorch, Scikit-learn

EXPERIENCE

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| Los Alamos National Laboratory <i>Graduate Intern — Focus: Estimation and Control of Gas Flow in Pipeline Networks</i> <ul style="list-style-type: none">Developed observers and controllers for gas pipeline networks subject to uncertaintiesSimulated gas flow in pipelines to validate the developed control algorithmsDocumented results in a research paper submitted to American Control Conference (ACC) 2025 | Jul 2024 - Aug 2024 <i>Los Alamos, NM</i> |
| University of California San Diego <i>Graduate Student Researcher — Focus: PDEs, Event-triggered Control, Traffic/Water Systems</i> <ul style="list-style-type: none">Solved the global exponential stability problem for linear parabolic & hyperbolic PDEs under event-triggered control with dynamic triggering, addressing a problem that had remained unsolved for 7 yearsDeveloped the first periodic event-triggered and self-triggered control strategies for parabolic & hyperbolic PDEs with industrial applications in traffic control and water management in reservoirsSimulated traffic and water systems to validate the developed control algorithmsDocumented results in research articles published in IEEE Transactions on Automatic Control (IEEE TAC) & Automatica | Jul 2022 – Present <i>San Diego, CA</i> |
| Rensselaer Polytechnic Institute <i>Graduate Research Student — Focus: PDEs, Event-triggered Control, 3D Printing</i> <ul style="list-style-type: none">Developed event-triggered boundary control strategies for physics-based model of melting processes (Stefan problem) and reaction-diffusion processes with applications in 3D printingDocumented results in research articles published in IEEE TAC, Automatica, & International Journal of Control | Apr 2020 - May 2022 <i>Troy, NY</i> |
| Sri Lanka Technological Campus <i>Research Engineer — Focus: Hyperspectral Image Analysis</i> <ul style="list-style-type: none">Developed graph-based blind source separation algorithms for unmixing of hyperspectral imagesDocumented results in a research article published in IEEE Transactions on Geoscience and Remote Sensing | Jan 2018 - Jul 2019 <i>Sri Lanka</i> |
| University of Peradeniya <i>Undergraduate Research Student — Focus: Robotics and Control</i> <ul style="list-style-type: none">Developed a 5-DOF underwater robotic vehicle (URV) and performed system modeling and parameter identificationDesigned MIMO sliding mode controllers to address trajectory tracking and path following control of the URVDocumented results in a research paper published in an IEEE conference | Jan 2017 - Oct 2017 <i>Sri Lanka</i> |

SELECTED PUBLICATIONS

- (J1) **B. Rathnayake**, M. Diagne, J. Cortes, and M. Krstic, “Performance-barrier event-triggered control of a class of reaction-diffusion PDEs [🔗](#)”, accepted for publication in Automatica
- (J2) **B. Rathnayake** and M. Diagne, “Observer-based periodic event-triggered and self-triggered boundary Control of a class of parabolic PDEs [🔗](#)”, IEEE Transactions on Automatic Control, vol. 69, no. 12, pp. 8836-8843, 2024
- (J3) **B. Rathnayake** and M. Diagne, “Observer-based event-triggered boundary control of the one-phase Stefan problem [🔗](#)”, International Journal of Control, 2024
- (J4) **B. Rathnayake**, M. Diagne, and I. Karafyllis, “Sampled-data and event-triggered boundary control of a class of reaction-diffusion PDEs with collocated sensing and actuation [🔗](#)”, Automatica 137, 110026, 2022
- (J5) **B. Rathnayake**, M. Diagne, N. Espitia, and I. Karafyllis, “Observer-based event-triggered boundary control of a class

- of reaction-diffusion PDEs [\[2\]](#)”, IEEE Transactions on Automatic Control, vol. 67, no. 6, pp. 2905 – 2917, 2022
- (J6) **B. Rathnayake**, E. M. M. B. Ekanayake, K. Weerakoon, G. M. R. I. Godaliyadda, M. P. B. Ekanayake, and H. M. V. R. Herath, “[Graph-based blind hyperspectral unmixing via nonnegative matrix factorization \[2\]](#)”, IEEE Transactions on Geoscience and Remote Sensing, 58(9), 6391-6409, 2020
- (C1) **B. Rathnayake**, A. Zlotnik, S. Tokareva, and M. Diagne, “[Setpoint tracking and disturbance attenuation for gas pipeline flow subject to uncertainties using backstepping \[2\]](#)”, submitted to IEEE ACC 2025
- (C2) P. Zhang, **B. Rathnayake**, M. Diagne, and M. Krstic, “[Performance-barrier-based event-triggered boundary control of congested ARZ traffic PDEs \[2\]](#)”, in IFAC-PapersOnLine, vol. 58, no. 10, pp. 182–187, 2024
- (C3) **B. Rathnayake**, M. Diagne, J. Cortes, and M. Krstic, “[Performance-barrier-based event-triggered boundary control of a class of reaction-diffusion PDEs \[2\]](#)”, in IEEE ACC 2024, pp. 5313–5319
- (C4) **B. Rathnayake** and M. Diagne, “[Self-triggered boundary control of a class of reaction-diffusion PDEs \[2\]](#)”, in IEEE CDC 2023, pp. 6887–6892
- (C5) **B. Rathnayake** and M. Diagne, “[Observer-based periodic event-triggered boundary control of the one-phase Stefan problem \[2\]](#)”, in IFAC-PapersOnLine, vol. 56, no. 2, pp. 11415–11422, 2023
- (C6) **B. Rathnayake** and M. Diagne, “[Periodic event-triggered boundary control of a class of reaction-diffusion PDEs \[2\]](#)”, in IEEE ACC 2023, pp. 1800–1806
- (C7) **B. Rathnayake** and M. Diagne, “[Event-based boundary control of the Stefan problem: A dynamic triggering approach \[2\]](#)”, in IEEE CDC 2022, pp. 415–420.
- (C8) **B. Rathnayake** and M. Diagne, “[Event-based boundary control of one-phase Stefan problem: A static triggering approach \[2\]](#)”, in IEEE ACC 2022, pp. 2403–2408
- (C9) **B. Rathnayake**, M. Diagne, and I. Karafyllis, “[Sampled-data boundary control of a class of reaction-diffusion PDEs with collocated sensing and actuation \[2\]](#)”, in IEEE CDC 2021, pp. 434–441
- (C10) **B. Rathnayake**, M. Diagne, N. Espitia, and I. Karafyllis, “[Event-triggered output-feedback boundary control of a class of reaction-diffusion PDEs \[2\]](#)”, in IEEE ACC 2021, pp. 4069–4074
- (C11) **B. Rathnayake**, K. M. K. Weerakoon, G. M. R. I. Godaliyadda, and M. P. B. Ekanayake, “[A robust control paradigm for path following of an underwater robotic vehicle \[2\]](#)”, in 2018 IEEE International Conference on Computer Science & Education (ICCSE), pp. 1-6

Review Services

- IEEE Transactions on Automatic Control
- Automatica
- Systems & Control Letters
- International Journal of Control
- American Control Conference (ACC)
- Conference on Decision and Control (CDC)
- European Control Control (ECC)