Debarshi Patanjali Ghoshal | CV

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Education

McGill University **Montreal, Canada**
Doctor of Philosophy in Electrical & Computer Engineering *2014 – 2021*
Thesis: Finite-interval estimation using double-sided kernels and differential invariants
Supervisor: Prof. Hannah Michalska

Indian Institute of Technology Kanpur **Kanpur, India**
Master of Technology in Electrical Engineering *2012 – 2014*
Thesis: Robot learning from a human expert through modified kinesthetic teaching
Supervisor: Prof. Laxmidhar Behera

Jadavpur University **Kolkata, India**
Bachelor of Electrical Engineering *2007 – 2011*
Elective: Control Systems Engineering

Experience

Research

Aerial Technologies **Montreal, Canada**
Industrial R&D *Oct 2018 – Sept 2020*
Applying Feature Engineering in Artificial Intelligence/Machine Learning to solve practical problems in the field of WiFi Motion Analytics; the project started as a Research Internship, which was later extended into a paid position as an independent Research Scientist Consultant.

Jadavpur University **Kolkata, India**
Research Project *Oct 2011 – May 2012*
Project title: Robust controller design for boiler burning process using RBode plot
Supervisor: Prof. Smita Sadhu (Department of Electrical Engineering, Jadavpur University)
The work resulted in a peer-reviewed conference paper.

Indian Institute of Science, Bangalore **Bangalore, India**
Summer Internship *May 2010 – Jun 2010*
Project title: Waypoint navigation system for unmanned aerial vehicles (UAV)
Supervisor: Prof. Seetharama M. Bhat (Department of Aerospace Engineering, IISc.)

Jadavpur University **Kolkata, India**
Research Project *May 2009 – Apr 2010*
Project title: Neural network approach for automatic number plate recognition (ANPR)
Supervisor: Prof. Anjan Rakshit (Department of Electrical Engineering, Jadavpur University)
The work resulted in a peer-reviewed conference paper, which also won the best-paper prize of the conference.

Teaching

McGill University — **Montreal, Canada**
Graduate Teaching Assistant, Electrical & Computer Engineering Dept. — *Sep 2017 – Dec 2018*
ECSE 404 Control Systems (Fall 2018, Fall 2017)

Indian Institute of Technology Kanpur — **Kanpur, India**
Teaching Assistant, Electrical Engineering Department — *Aug 2012 – Apr 2014*
Control System Analysis (Spring 2014, Spring 2013)
Basics of Modern Control Systems (Fall 2013)
Intelligent Informatics Lab (Fall 2012)

Miscellaneous

McGill University — **Montreal, Canada**
Grader, Electrical and Computer Engineering Department — *Sep 2016 – Dec 2018*
ECSE 500 Mathematical Foundations of Systems (Fall 2018)
ECSE 443 Introduction to Numerical Methods in Electrical Engineering (Winter 2017)
ECSE 404 Control Systems (Fall 2016)

Honours & Awards

NSERC Engage Plus Fellowship
Natural Sciences and Engineering Research Council of Canada — *2019 – 2020*

NSERC Engage Fellowship
Natural Sciences and Engineering Research Council of Canada — *2018 – 2019*

Lorne Trottier Engineering Graduate Fellowship
McGill University - Faculty of Engineering — *2014 – 2017*

Geoff Hyland Fellowship in Engineering
McGill University - Faculty of Engineering — *2014 – 2017*

Graduate Excellence Fellowship - Engineering
McGill University - Faculty of Engineering — *2014 – 2017*

MHRD Scholarship
Ministry of Human Resource Development, Govt. of India — *2012 – 2014*

Selected Publications

D. P. Ghoshal and H. Michalska, "Finite interval estimation of LTI systems using differential invariance, instrumental variables, and covariance weighting," in *2020 American Control Conference (ACC)*, pp. 731–736, IEEE, 2020.

D. P. Ghoshal and H. Michalska, "Finite-interval kernel-based identification and state estimation for LTI systems with noisy output data," in *2019 American Control Conference (ACC)*, pp. 4982–4989, IEEE, 2019.

D. P. Ghoshal, S. Sinha, and H. Michalska, "Algebraic nonlinear identification and output tracking control of synchronous generator using differential flatness," in *2019 23rd International Conference on System Theory, Control and Computing (ICSTCC)*, pp. 206–211, IEEE, 2019.

A. Pandey, D. P. Ghoshal, and H. Michalska, "Variational approach to joint linear model and state estimation," in *2018 Annual American Control Conference (ACC)*, pp. 3520–3525, IEEE, 2018.

D. Sridhar, D. P. Ghoshal, and H. Michalska, "B-splines in joint parameter and state estimation in linear time-varying systems," in *2018 Annual American Control Conference (ACC)*, pp. 3508–3513, IEEE, 2018.

D. P. Ghoshal, K. Gopalakrishnan, and H. Michalska, "Kernel-based adaptive multiple model target tracking," in *Control Technology and Applications (CCTA), 2017 IEEE Conference on*, pp. 1338–1343, IEEE, 2017.

D. P. Ghoshal and H. Michalska, "Double-sided kernel observer for linear time-varying systems," in *Control Technology and Applications (CCTA), 2017 IEEE Conference on*, pp. 922–927, IEEE, 2017.

D. P. Ghoshal, K. Gopalakrishnan, and H. Michalska, "Algebraic parameter estimation using kernel representation of linear systems," *IFAC-PapersOnLine*, vol. 50, no. 1, pp. 12898–12904, 2017.

D. P. Ghoshal, K. Gopalakrishnan, and H. Michalska, "Using invariance to extract signal from noise," in *American Control Conference (ACC), 2017*, pp. 2588–2593, IEEE, 2017.

D. P. Ghoshal, N. Das, S. Dutta, and L. Behera, "Robot learns from human teacher through modified kinesthetic teaching," *IFAC Proceedings Volumes*, vol. 47, no. 1, pp. 773–780, 2014.

A. Roy and D. P. Ghoshal, "Number plate recognition for use in different countries using an improved segmentation," in *Emerging Trends and Applications in Computer Science (NCETACS), 2011 2nd National Conference on*, pp. 1–5, IEEE, 2011.

Computer skills

Programming: Python, MATLAB, C, Fortran
Publishing: LaTeX
Libraries: Scikit-learn, NumPy, SciPy, Matplotlib
Miscellaneous: Git, Linux

Volunteer work

Reviewer:
American Control Conference (2019)
Computer Science and Electronic Engineering Conference (2018, 2015)
International conference on Advances in Control and Optimization of Dynamic Systems (2014)

Elected position: Vice-President of Facilities
McGill University - Electrical Engineering Graduate Student Society (EEGSS) *2016 – 2017*

International Student Buddy
McGill University - International Student Services *2015 – 2017*