

Curriculum vitae

PERSONAL INFORMATION

Name: From, Pål Johan
Date of birth: 15.01.1980
Sex: Male
Nationality: Norwegian
URL for web site: www.nmbu.no/roboticsandcontrol

EDUCATION

2010 PhD: Date and year of approved disputation: 26.05.2010.
Department of Engineering Cybernetics, Norwegian University of Science and Technology (NTNU), Norway.
2006 Master
Department of Engineering Cybernetics, NTNU, Norway

CURRENT AND PREVIOUS POSITIONS

2016 - Professor,
Department of Mathematical Sciences and Technology, Faculty of Environmental Science and Technology, Norwegian University of Life Sciences, Norway.
2010 - 2016 Associate Professor,
Department of Mathematical Sciences and Technology, Faculty of Environmental Science and Technology, Norwegian University of Life Sciences, Norway.
2009 - 2010 Researcher
Department of Engineering Cybernetics, NTNU, Norway.

FELLOWSHIPS AND AWARDS

2013 - 2016 Science Without Border Grant, Brazil - Special Visiting Researcher
Federal University of Rio de Janeiro, Brazil.
2011 - 2014 NRC FRITEK post-doctoral research fellowship
Department of Mathematical Sciences and Technology, Faculty of Environmental Science and Technology, Norwegian University of Life Sciences, Norway.
2009 Doctoral thesis rated *excellent in relation to international standards* and completed with the highest number of publications ever submitted as a dissertation at ITK, NTNU.
2008 In the top 3 of the Learning class (CS294-40) at UC Berkeley.
2006 In the top 5% of the class of Engineering Cybernetics, NTNU.

MOBILITY

2012 - 2015 Visiting Researcher/Special Visiting Researcher (18 months)
Federal University of Rio de Janeiro, Brazil (with Liu Hsu and Ramon Costa).
2008 - 2009 Visiting Researcher (18 months)
University of California, Berkeley, USA (with Pieter Abbeel and Shankar Sastry).
2007 - 2008 Visiting Researcher (12 months)
Hong Kong University of Science and Technology, China (with Zexiang Li).

SUPERVISION OF GRADUATE STUDENTS AND RESEARCH FELLOWS

2009 - 2015 Number of PhD Students: 3. Number of Master Students: 30.
Department of Mathematical Sciences and Technology, Faculty of Environmental Science and Technology, Norwegian University of Life Sciences, Norway.

TEACHING ACTIVITIES

- 2009- 2015 Introduction to Automation and Control
Faculty of Science and Technology, Norwegian University of Life Sciences.
- 2013- 2015 Introduction to Vehicle-manipulator systems
Faculty of Science and Technology, Norwegian University of Life Sciences.
- 2013-2014 Advanced Robotics
Electrical Engineering, Federal University of Rio de Janeiro, Brazil.

INSTITUTIONAL RESPONSIBILITIES

- 2010- Head, Robotics and Control Group, Norwegian Univ. of Life Sciences, Norway.

COMMISSIONS OF TRUST

- 2010- Associate Editor
Modeling, Identification and Control (Scientific Journal)

RESEARCH INTERESTS / RESEARCH PROFILE

My main research areas are modeling and control of robotic manipulators and mobile robots. I am currently performing research on mobile manipulators and vehicle-manipulator systems, and in particular on robust and singularity-free modeling of these. Other research activities include surgical robotics, offshore robotics, and industrial robotics with application to spray painting in the automotive industry. I coordinate several projects on agricultural robotics and develop new designs and the control for robots to be used in the agricultural domain. My research is both theoretical and practical, and I have built several robots that I have used to verify my theoretical contributions.

PUBLICATIONS

IN MEDIA

- Roboter vil overta matproduksjonen, Dagens Næringsliv, August 18th 2017
- Roboter kan løse matvarekrisen, Aftenposten, February 15th 2016

POPULAR SCIENCE (SELECTED)

- Farm robots ready to fill Britain's post-EU labour shortage, Financial Times, April 25th 2017
- Latest crop of robots heads for the fields, The Times, April 26th 2017
- Meet Thorvald: Helpful robot farmer could replace humans in the fields within a decade, Daily Mail, April 26th 2017
- British farms could turn to robots to deal with a post-Brexit labour crisis, Business Insider, April 25th 2017
- Roboten «Doris» sirkler rundt og oppdager feil på plattformen, Teknisk Ukeblad, January 3rd 2016
- Kronprins Haakon markerte videre Brasil-satsning, Forskning.no, November 18th 2015
- Thorvald skal ta over jobben til traktoren, Teknisk Ukeblad, June 2nd 2015
- Ny landbruksrobot skal danke ut traktoren, Bondebladet, June 2nd 2015
- Tror ny landbruksrobot kan erstatte traktoren, Nationen, June 2nd 2015
- Robot overtar for traktor, Front page, Østlandets Blad, May 29th 2015
- Lager roboter som skal ta over for traktoren, forskning.no, May 3rd 2015
- Utvikler fremtidens roboter, SIU Magazine, March 3rd 2015
- Markens grøde - også i framtiden, www.miljodirektoratet.no, September 9th 2014
- Studentene delta i forskningen, SIU Magazine, April 28th 2014
- Oil off the coast of Rio drives the research, SIU Landrapport Brasil, April 2013

BIBLIOMETRIC MEASURES (from Google Scholar (low estimate), after 2012):

- Citations 343
- h-index 10
- i10-index 11

LIST OF PEER REVIEWED PUBLICATIONS BY TOPIC

- Total number of publications listed: 59.
- Journal Papers: 17/59.
- Papers as first author: 32/59
- Books: 1/59.
- Conference Papers: 38/59.
- Papers as last author: 20/59

Books and Theses

1. Vehicle-manipulator Systems—Modeling for Simulation, Analysis and Control, P. J. From, K. Y. Pettersen, and J. T. Gravdahl, *Springer Verlag*, 2014.
2. Introduction to Control and Automation, J. T. Gravdahl and P. J. From, Compendium (Norwegian).
3. Offshore Robotics—Robust and Optimal Solutions for Autonomous Operation, P. J. From, Ph.D. thesis, Norwegian University of Science and Technology, Trondheim, Norway

Mobile Manipulators / Modeling and Control of Vehicle-manipulator Systems

4. Corrections to Singularity-Free Dynamic Equations of Open-Chain Mechanisms with General Holonomic and Nonholonomic Joints, P. J. From, V. Duindam and S. Stramigioli, *IEEE Transactions on Robotics*, 2012.
5. An Explicit Formulation of the Singularity-Free Dynamic Equations of Mechanical Systems in Lagrangian Form - Part one: Single Rigid Bodies, P. J. From, *Modeling, Identification and Control*, Vol. 32, No. 3, 2012.
6. An Explicit Formulation of the Singularity-Free Dynamic Equations of Mechanical Systems in Lagrangian Form - Part two: Multibody Systems, P. J. From, *Modeling, Identification and Control*, Vol. 32, No. 3, 2012.
7. On the Boundedness Property of the Inertia Matrix and Skew- Symmetric Property of the Coriolis Matrix for Vehicle-Manipulator Systems, P. J. From, I. Schjølberg, J. T. Gravdahl, K. Y. Pettersen and t. I. Fossen, *Journal of Dynamic Systems, Measurement, and Control*, Vol. 134, No. 4, 2012.
8. Singularity-Free Dynamic Equations of Spacecraft-Manipulator Systems, P. J. From, K. Y. Pettersen, and J. T. Gravdahl, *ACTA Astronautica*, Vol. 69, No. 11-12, 2011.
9. A Singularity Free Formulation of the Dynamically Equivalent, Manipulator Mapping of Space Manipulators, P. J. From, K. Y. Pettersen, and J. T. Gravdahl, *AAIA Space*, 2011.
10. Motion planning and control of robotic manipulators on seaborne platforms, P. J. From, J. T. Gravdahl, T. Lillehagen and P. Abbeel, *Control Engineering Practice*, Vol. 19, No. 8, 2011.
11. Singularity-Free Dynamic Equations of Vehicle-Manipulator Systems, P. J. From, V. Duindam, K. Y. Pettersen, J. T. Gravdahl and S. Sastry, *Simulation Modelling Practice and Theory*, Vol. 18, No. 6, 2010.
12. Singularity-Free Dynamic Equations of AUV-Manipulator Systems, P. J. From, K. Y. Pettersen and J. T. Gravdahl, *Symposium on Intelligent Autonomous Vehicles*, 2010.
13. Skew-symmetric properties of the Coriolis matrix for vehicle-manipulator system, P. J. From, K. Y. Pettersen, J. T. Gravdahl, *Symp. on Intelligent Autonomous Vehicles*, 2010.
14. On the Influence of Ship Motion Prediction Accuracy on Motion Planning and Control of Robotic Manipulators on Seaborne Platforms, P. J. From, J. T. Gravdahl and P. Abbeel, *International Conf. on Robotics and Automation*, 2010.
15. Singularity-Free Dynamic Equations of Spacecraft-Manipulator Systems, P. J. From, K. Y. Pettersen and J. T. Gravdahl, *International Aeronautical Congress*, 2010.
16. Modeling and Motion Planning for Mechanisms on a Non-Inertial Base, P. J. From, V. Duindam, J. T. Gravdahl and S. Sastry, *IEEE Int. Conf. on Robotics and Automation*, 2009.

Agricultural Robotics

17. Thorvald II - a Modular and Re-Configurable Agricultural Robot, L. Grimstad and P. J. From, *IFAC World Congress, Toulouse, France, July 2017*.
18. Exploring Robots and UAVs As Phenotyping Tools in Plant Breeding, I. Burud, G. Lange, M. Lillemo, E. Bleken, L. Grimstad and P. J. From, *IFAC World Congress, Toulouse, France, July 2017*.
19. Kinematic Modeling and Control Design of a Novel Single-Rail Parallel Arm, L. Grimstad, M. F. Xaud, A. C. Leite and P. J. From, *IFAC World Congress, Toulouse, France, July 2017*.
20. Initial field-testing of Thorvald - a versatile robotic platform for agricultural applications, L. Grimstad, H. N. T. Phan, C. D. Pham, P. J. From, *IROS Workshop on Agri-Food Robotics: dealing with natural variability*, 2015.
21. On the design of a low-cost, light-weight, and highly versatile agricultural robot, L. Grimstad, C. D. Pham, H. N. T. Phan, P. J. From, *IEEE International Workshop on Advanced Robotics and its Social Impacts*, 2015.

Functional Redundancy and Spray Painting

22. Optimal Paint Gun Orientation in Spray Paint Applications - Experimental Results, P. J. From, J. Gunnar and J. T. Gravdahl, *IEEE Transactions on Automation Science and Engineering*, Vol. 8, No. 2, 2011.
23. A Real-Time Algorithm to Determine the Optimal Paint Gun Orientation in Spray Paint Applications, P. J. From and J. T. Gravdahl, *IEEE Transactions on Automation Science and Engineering*, Vol. 7, No. 4, 2010.
24. Representing Sets of Orientations as Convex Cones, P. J. From and J. T. Gravdahl, *IEEE International Conference on Robotics and Automation*, 2009.
25. On the Equivalence of Orientation Error and Positive Definiteness of Matrices, P. J. From and J. T. Gravdahl, *Int. Conference on Control, Automation, Robotics and Vision*, 2008.
26. Real-time Optimal Trajectory Planning for Robotic Manipulators with Functional Redundancy, P. J. From and J. T. Gravdahl, *Int. Conference on Industrial Technology*, 2008.
27. Representing Attitudes as Sets of Frames, P. J. From and J. T. Gravdahl, *American Control Conference*, 2007.

Mechanism Synthesis

28. A Geometric Approach to the Design of Serial and Parallel Manipulators with Passive Joints, P. J. From, C. Pham and J. T. Gravdahl, *Applied Mathematics*, Vol. 5, no. 16, pp. 2585-2601, 2014.
29. A Geometric Approach to Handling Torque Failure in Serial and Closed Chain Manipulators with Passive Joints, P. J. From, C. Pham and J. T. Gravdahl, *Annual Meeting GAMM*, 2014.
30. Fault Tolerance of Parallel Manipulators with Passive Joints, P. J. From and J. T. Gravdahl, *IFAC Symposium on Fault Detection, Supervision and Safety of Technical Processes*, 2009.
31. On the Mobility and Fault Tolerance of Closed Chain Manipulators with Passive Joints, P. J. From and J. T. Gravdahl, *Modeling, Identification and Control*, Vol. 29, No. 4, 2008.

Inverse Kinematics

32. Iterative Solutions to the Inverse Geometric Problem for Manipulators with no Closed Form Solution, P. J. From and J. T. Gravdahl, *Modeling, Identification and Control*, Vol 29, 2008.
33. General Solutions to Functional and Kinematic Redundancy, P. J. From and J. T. Gravdahl, *Modeling, Identification and Control*, Vol. 29, No. 2, 2008.
34. Considering Passive Joints as Functional Redundancy, P. J. From and J. T. Gravdahl, *IFAC World Congress*, 2008.
35. General Solutions to Functional and Kinematic Redundancy, P. J. From and J. T. Gravdahl, *IEEE Conference on Decision and Control*, 2007.

Offshore Robotics

36. A Conceptual Framework for Autonomous Robotic Manipulation of Valves Using Visual Sensing, R.O. Faria, F. Kucharczak, G. M. Freitas, A. C. Leite, F. Lizarralde, M. Galassi, and P. J. From, *2nd IFAC Workshop on Automatic Control in Offshore Oil and Gas Production*, 2015.
37. The Embedded Electronics and Software of the Doris Offshore Robot, G. de Carvalho, G. M. Freitas, R. R. Costa, G. H. de Carvalho, J. F.L. de Oliveira, S. L. Netto, E. da Silva, M. Xaud, L. Hsu, G. Motta-Ribeiro, A. Neves, F. Lizarralde, I. Marcovitz, A. J. Peixoto and E. Nunes, P. J. From, M. Galassi and A. Røyrvøy, *2nd IFAC Workshop on Automatic Control in Offshore Oil and Gas Production*, 2015.
38. Remote Calibration and Trajectory Replanning for Robot Manipulators Operating in Unstructured Environments, A. C. Leite, F. Lizarralde, P. J. From, R. Costa, L. Hsu, *IFAC Automatic Control in Offshore Oil and Gas Production*, 2012.
39. Uma arquitetura para teleoperação integrando interface natural, realimentação de força e servovisão, G. C. da Motta-Ribeiro, A. C. Leite, P. J. From, F. Lizarralde, L. Hsu, *Congresso Brasileiro de Automação*, 2012.
40. Algoritmos de Controle Cinemático com Desvio de Obstáculos aplicados à Robôs do tipo Pórtico, T. B. de Almeida-Antonio, A. C. Leite, P. J. From, L. Hsu, F. Lizarralde, *Congresso Brasileiro de Automação*, 2012.
41. DORIS - Monitoring Robot for Offshore Facilities, G. de Carvalho, G. Freitas, R. Costa, G. de Carvalho, J. de Oliveira, S. Netto, E. da Silva, M. Xaud, L. Hsu, G. Motta-Ribeiro, A. Neves, F. Lizarralde, I. Marcovitz, A. Peixoto and E. Nunes, P. J. From, M. Galassi and A. Røyrvøy, *Offshore Technology Conference*, 2013.
42. Control Allocation for Mobile Manipulators with On-board Cameras, P. C. Dung and P. J. From, *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2013.

Telemanipulation, Haptics, and Robotic Surgery

43. Analysis of a Moving Remote Center of Motion for Robotics-Assisted Minimally Invasive Surgery, C. D. Pham, F. Coutinho, A. Leite, F. Lizarralde, P. J. From, and R. Johansson, *IEEE/RSJ International Conference on Intelligent Robots and Systems*, 2015
44. A Control Allocation Approach to Haptic Control of Underwater Robots, C. D. Pham, H. N. Phan and P. J. From, *IEEE International Workshop on Advanced Robotics and its Social Impacts*, 2015
45. Evaluation of Subjective and Objective Performance Metrics for Haptically Controlled Robotic Systems, C. D. Pham, C. Spiten and P. J. From, *Modeling, Identification, and Control*, Vol 35, No. 3, 2014
46. On the Manipulability of Velocity-constrained Serial Robotic Manipulators, P. J. From, A. Robertsson and R. Johansson, *IFAC World Congress*, 2014.
47. Optimal Base Positioning for Complex Mobile Manipulation Tasks, H. N. Phan and P. J. From, *IEEE International Conference on Robotics and Biomimetics*, 2014.
48. Comparison of Mental and Theoretical Evaluations of Remotely Controlled Mobile Manipulators, C. D. Pham, H. N. Phan and P. J. From, *The 19th World Congress of the International Federation of Automatic Control*, 2014.
49. Comparison of Mental and Theoretical Evaluations of Remotely Controlled Mobile Manipulators, P. C. Dung, H. Than and P. J. From, *IFAC World Congress*, 2014.
50. An Analytical Approach to Operational Space Control of Robotic Manipulators with Kinematic Constraints, P. C. Dung, F. Coutinho, F. Lizarralde, L. Hsu and P. J. From, *IFAC World Congress*, 2014.
51. An Analytical Approach to Operational Space Control of Robotic Manipulators with Kinematic Constraints, F. Coutinho, F. Lizarralde, P. C. Dung, L. Hsu and P. J. From, *Congresso Brasileiro de Automação*, 2014.
52. Hybrid Stiff/Compliant Workspace Control for Robotized Minimally Invasive Surgery, P. J. From, J. H. Cho, A. Robertsson, T. Nakano, M. Ghazaei and Rolf Johansson, *IEEE International Conference on Biomedical Robotics and Biomechatronics*, 2014.
53. On the Kinematics of Robotic-assisted Minimally Invasive Surgery, P. J. From, *Modeling, Identification and Control*, Vol 34, No 2, pp. 69-82, 2013.
54. A Robotics Architecture for Task Planning and Integration of Real and Virtual Systems for Offshore Applications, L. Hsu, F. Lizarralde, R. Costa, G. Freitas, G. Motta-Ribeiro, T. Almeida-Antonio, F. Coutinho, I. H. Santos, M. Galassi, A. Raposo, F. Carvalho, D. Medeiros, P. Ponce, P. Cecon, P. J. From, *Offshore Technology Conference*, 2013.
55. Design of an Intermediate Layer to Enhance Operator Awareness and Safety in Telesurgical Systems, J. H. Cho, P. J. From, M. Annerstedt, A. Robertsson, and R. Johansson, *IEEE/RSJ Int. Conf. on Intelligent Robots and Systems*, 2012.

Other Topics

56. Control and Obstacle Collision Avoidance Method applied to Human-Robot Interaction, A. C. Leite, T. A. Antonio, P. J. From, F. Lizarralde, L. Hsu, *IEEE International Workshop on Advanced Robotics and its Social Impacts*, 2015.
57. Cost-efficient temperature regulation of an office building utilizing the drop in night temperature, P. J. From and A. Føyn, *WSEAS*, 2011.
58. Trends in Research and Publication: Science 2.0 and Open Access, M. Breivik, G. Hovland and P. J. From, *Modeling, Identification and Control*, Vol. 30, No. 3, 2009.
59. Visual Servoing for Object Manipulation with a Multifingered Robot Hand, Matheus F. Reis, Antonio C. Leite, Pål J. From, Liu Hsu, Fernando Lizarralde, *IFAC Symposium on Robot Control*, 2015.