



# Ole Magnus Brastein

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## Experience

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### **Developer/Consultant** BEDKO AS, 2011-05 – d.d

- Successful self-employed consultant, both domestic and international clients
- Focusing on software and hardware development services
- C, C++, C#, MFC, MATLAB, software engineering, embedded systems, microcontrollers
- Communications, TCP/UDP, Modbus TCP, CAN, WiFi, proprietary protocols
- Algorithm design, software and hardware, control systems, HMI, Electronics design (PCB)

### **Project/development Engineer** Scantrol AS, 2005-09 – 2011-05

- Software and hardware development, Control modules for ship/offshore
- Industrial IT and control systems, winch control systems, data collection software

### **Project Engineer** Siemens Oil & Gas, 2004-07 – 2005-09

- Programming PLC for safety systems, HMI for safety control system
- Automatic migration of legacy PLC software

## Education

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### **PhD – Machine learning and parameter estimation** University of South-Eastern Norway, 2016-04 – d.d

- Data-driven modeling of building thermal behavior, complex systems that requires use of machine learning
- Main research focus: Model calibration, machine learning using prior physical knowledge combined with measurement data
- Giving lectures and talks about machine learning, both from technical perspective and about the impacts of this technology on society

### **MSc – Systems and Control Engineering** Telemark University College, 2013-08 – 2016-02

- Thesis: Grey box models for estimation of heating times for buildings
- Project: Estimation of volumetric fractions in multiphase pipe flow based on gamma spectral densitometry and multivariate regression modeling
- Project: Building Automation System
- Software engineering (OOADP), control systems, MPC, 4SID, & Estimation, Industrial IT, Multivariate Analysis/Chemometrics

### **BSc – Electronics** Bergen University College, 2001-08 – 2004-06

- Project: Three-phase generator simulator for Megacon AS.
- Study electronics engineering with focus on software development for embedded systems.
- Signal processing, digital image processing, mathematics (linear algebra, dynamic systems)

## Other Courses

**Robotics** University of Oslo, 2010-01 – 2010-06

- Forward/Inverse kinematics, dynamics and control of robotic manipulators

**Micro/Nano-systems** Vestfold University College, 2008-08 – 2010-06

- Mathematics, Sensor and electronics design

## Lectures and speaking engagements (highlights)

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- Machine learning workshop, SMART group at USN (23.11.17)
- Machine learning for the industry, TEKNA (29.5.18)
- What is Artificial intelligence? - Ethical challenges for society, GET Academy Larvik (20.11.18)
- Machine Learning for the process industry, YARA Advanced Process Control (06.12.18)

## Computer technology and programming Languages

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- Main languages: C# (WinForms, UWP), C, C++ (MFC for legacy systems), MATLAB
- Machine learning: Artificial Neural Nets, Decision tree methods, Ensemble methods
- Multivariate Analysis: PCA, PLS-R, MLR
- Numerical Methods, simulations/solving of ODE/PDE
- Cybernetics: Kalman Filters (EnKF, UKF, EKF), Model based control, PID control, System ident.
- Other languages: SQL, LabView, Python, Basic (Visual basic)
- Industrial IT: Networking, Ethernet/WiFi (hardware and firmware), TCP/UDP (IP-stack)

## Publications

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- O. Brastein, D. Perera, C. Pfeifer, and N.-O. Skeie, *Parameter estimation for grey-box models of building thermal behaviour*, Energy and Buildings, vol. 169, pp. 58–68, 2018.
- O. Brastein, R. Olsson, N.-O. Skeie, and T. Lindblad, *Human activity recognition by machine learning methods*, Norsk Informatikkonferanse, 2017.
- O. M. Brastein, *Grey-box models for estimation of heating times for buildings*, Master's thesis, Høgskolen i Sørøst-Norge, 2016.

## Languages

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**Norwegian:** Native language    **English:** Fluent

## Interests

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Hiking, nature, music, family and children, robotics, science & engineering, innovation and entrepreneurship