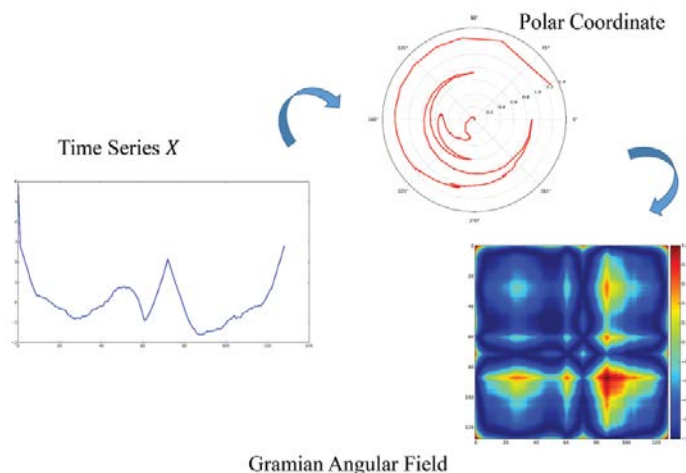
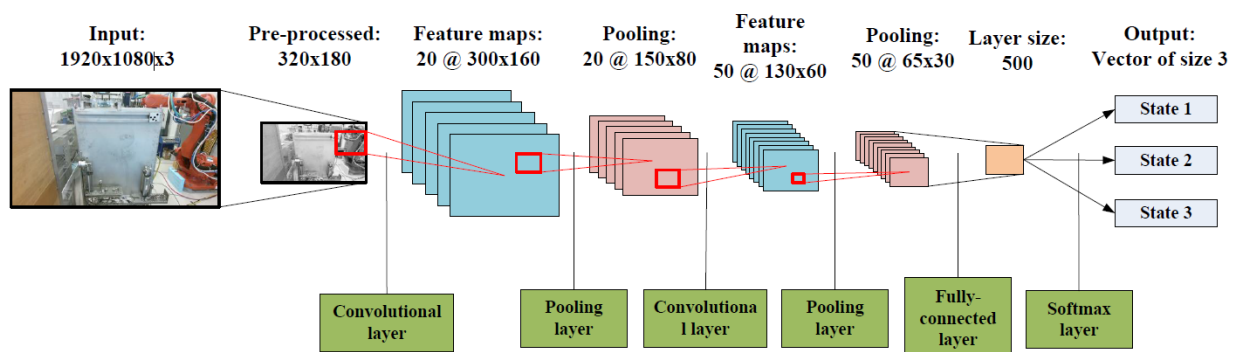


Project Title	Learning from time-series using Convolutional Neural Network (CNN)
Project Classification	Confidential (NDA protected)
ABB Contact/Supervisor	David Anisi
Project Description	Despite recent rapid advances and successful large-scale application of Deep Convolutional Neural Networks (CNNs), its adoption within the industry have been sparse. One contributing factor is that the applications so far mainly have been focusing on using image, video, sound, and text. This, while time-series data is the most frequently encountered data format in the process industry. To this end, this project aims at investigating and developing Deep CNN methods tailored for learning from a large number of time-series data.
Project Requirements	Upon an initial study of existing and relevant literature, methods and software, the successful candidate is expected to develop and implement a CNN algorithm allowing efficient learning from large number of time-series data. The expected output is tailored CNN algorithm(s) with experimental studies that prove their soundness in a realistic industrial setting.
Level	M.Sc. (or exceptional B.Sc. student)
Competence Required	The nature of the proposed thesis project, call for candidates characterized by strong drive, motivation and curiosity, a good general mathematical understanding combined with strong programming skills. Previous programming skill in Python and/or hand-on experience with open-source software such as Theano, TensorFlow, Torch, Caffe are highly desired.



Project Title	Deep Learning for autonomous gas sample taking
Project Classification	Public
ABB Contact/Supervisor	David Anisi
Project Description	Despite recent rapid advances and successful large-scale application of Deep Convolutional Neural Networks (CNNs), its adoption within the industry have been sparse. To this end, this project aims at investigating, implementing and comparing “Deep Learning” algorithms tailored for performing autonomous gas sample taking. As such, it builds upon [1] which only focused on the potential of Convolution Neural Network (CNN).
Project Requirements	Upon an initial study of existing and relevant literature, methods and software, the successful candidate is expected to implement and compare Deep Learning algorithms allowing efficient learning. The expected output is a comparative study detailing the pros and cons of the algorithms in a realistic industrial setting, complemented with experimental studies underlying the conclusions.
Level	M.Sc. (or exceptional B.Sc. student)
Competence Required	The nature of the proposed thesis project, call for candidates characterized by strong drive, motivation and curiosity, a good general mathematical understanding combined with strong programming skills. Previous programming skill in Python and/or hand-on experience with open-source software such as Theano, TensorFlow, Torch, Caffe are highly desired.



[1] Svein Gjermund Tveide. State recognition for autonomous gas sample taking using convolutional neural networks. Master's thesis, University of Agder (UiA), Grimstad, Norway, 2016

Project Title	Omsorgsleilighet
Project Classification	Public
ABB Contact/Supervisor	Håvard Devold /David Anisi
Project Description	Prosjektet mål er å se på tekniske funksjoner og muligheter innen en omsorgsleilighet. Foreslå integrasjon av elektroniske dørlåser, smartfunksjoner (lys, varme, komfyrvakt osv), infotainment, eksterne sensorer (så som video, UWB radar osv) samt evt. wearables (enheter som måle sukker, puls, temperatur, GPS posisjon osv). Utvikle smarte algoritmer og funksjoner for og overvåke at det er normal aktivitet, forslagsvis gjennom anvendelse av metoder innom intelligente og lærende system. Utvikle en demonstrator for en begrensa del av systemet med et utvalg funksjoner.
Project Requirements	Forventer ikke ferdige løsninger og produkter, men en strukturert og kreativ gjennomgang av muligheter samt en praktisk og realistisk demonstrator.
Level	M.Sc./B.Sc.

Project Title	Akvakultur på land - mekanisme for foring å transportere ut bunnfall
Project Classification	Public
ABB Contact/Supervisor	Håvard Devold
Project Description	Vi ser på mulighet for oppdrett av røye på land i lukkede anlegg. Et slikt system må være modulært for å tilpasses tomme fabrikk og driftsbygninger f.eks i Hedemark, og delt opp slik at det kan transporteres på normale veier. Et slikt system trenger også en foringsmekanisme og en egnet mekanisme for å transportere ut bunnfall som lagres. Prosjektets mål er og designa og bygge ett nedskalert men realistisk prototype av hvordan ett slikt system kan se ut.
Project Requirements	Kandidatene forventes kom opp med kreative ideer og lage en skalamodell. Forventer ikke ferdige løsninger og produkter, men en strukturert og kreativ gjennomgang av muligheter samt en praktisk og realistisk demonstrator.
Level	M.Sc./B.Sc.

Project Title	Drillbotics Student Competition
Project Classification	Public
ABB Contact/Supervisor	David Anisi
Project Description	International University competition organized by SPE Drilling Systems Automation Technical Section (SPED SATS) to “Design a rig and related equipment to autonomously drill a vertical well as quickly as possible while maintaining borehole quality and integrity of the drilling rig and drillstring.” http://www.drillbotics.com
Project Requirements	See <u>PDF file</u> on website. Phase I – Create and Design (Autumn) Phase II - Build and Operate (Fall) Finalists are awarded 10 kUSD. ABB will also contribute with products and expertise.
Level	M.Sc./B.Sc., 3-5 students/team
Competence Required	Truly multi-disciplinary
Suitable University and Study direction	All universities and study directions
Current status	2016-10-01 Competition announced at UiA Mechatronics

