

Andrew Presland

SOFTWARE ENGINEERING · MACHINE LEARNING · DATA PROCESSING

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Objective

Seeking a role in perception, computer vision and autonomous systems that exploits professional experience in machine learning and software engineering together with skills in sensing, simulation and high performance computing acquired as a particle physicist (PhD, Postdoc, CERN Research Fellow). In view of this objective I undertook a program of continued education focussed on computer vision, deep learning, and robotics by taking a personal sabbatical over the last year.

Experience

Data Scientist

Luzern, Switzerland

AxonVIBE AG.

2018 - 2021

- Worked on a location based contextual platform I building models that use mobile sensor data (GNSS/IMU) to detect behavioural patterns in users mobility (CNN, Gradient Boosting Machines, Spatio-Temporal Clustering, Markov Models). Constructed serverless injection pipelines for data-monitoring, anomaly detection, and feature extraction (AWS Lambda, Batch and S3).
- Developed a method of Significant Location detection and productionized it as a Spring Boot Batch service including ETL and JDBC data connectors as a Spring Boot RESTful service and visualization with Javascript dashboard.

Senior Software Engineer

Luzern, Switzerland

BBV SOFTWARE SERVICES AG.

2010 - 2018

- Delivered embedded software for (RTOS/Embedded Linux) using Agile and eXtreme Programming for projects including fieldbus based distributed real-time motion control (industrial robotics), communication and security modules (IoT), and Hardware Abstraction (SmartEnergy).
- Quality Assurance Engineering for medical devices with mobile app controller including executable functional specification in Cucumber, test automation with Appium and Jenkins CI.

Project Leader (Software)

Luzern, Switzerland

HAGENBUCH HYDRAULIC SYSTEMS AG.

2006 - 2010

- Development of real-time motion control systems for 6DOF parallel kinematic manipulators (Stewart Platforms) and Vibration Analysis rigs, real-time signal processing, spectral analysis, and HMI development (.Net).
- Project commissioning (on-site) and Level-2 technical support.

Research Fellow (Applied Physics)

Geneva, Switzerland

EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH (CERN)

2003 - 2006

- Computational Physics and 3D geometric modeling for Accelerator Driven Systems (ADS) using the CERN high performance computing cluster.
- Monte-Carlo simulation of multi-particle transport for energy deposition and radiation damage in the LHC control electronics under beam accident scenarios. The studies ultimately help ensure the correct and safe operation of the LHC.

Post Doctoral Research Associate (High Energy Physics)

Geneva, Switzerland

H. H. WILLS PHYSICS LABORATORY, UNIVERSITY OF BRISTOL

2001 - 2003

- Member of the LHCb collaboration searching for the source of matter-antimatter asymmetry in the universe by studying decays of sub-atomic particles containing b-quarks.
- Contributed to the physics Object Data Model, developed reconstruction code for the Data Processing Framework (Gaudi) and performed Monte-Carlo simulation and Scientific Data Analysis using ROOT Data Analysis Framework.

Doctoral Researcher (High Energy Physics)

Bristol, UK

H. H. WILLS PHYSICS LABORATORY, UNIVERSITY OF BRISTOL

1998 - 2001

- Member of the CMS collaboration, a general purpose detector at the LHC primarily focussed on the search for the Higgs Boson.
- Prototyping of the PbWO4 scintillating crystal calorimeters with photon detector readout for detecting electromagnetic particles. Physics event reconstruction (from Geant4 simulation) using Kalman filters, energy clustering. Data mining and statistical analysis using ROOT.

Skills

Code Python, C++, Cuda, JAVA, Scala, MATLAB, SQL, Git

Numerical Probability, Statistics, Linear Algebra, Calculus, Scientific Data Analysis

Frameworks Tensorflow, Keras, TensorRT, OpenCV, Scikit-learn, numpy, pandas, scipy, Jupyter

ML / AI CNN, RNN, LSTM, GAN, Object Detection, Random Forest, Gradient Boosting Machines, Clustering

Computer Vision Feature Detection, Matching, Tracking, Optical Flow, Visual Odometry

Data Engineering Apache Beam, Apache Spark, Tensorflow Extended (TFX), AWS Lambda Batch S3, Docker

Robotics ROS, Gazebo Simulator, RViz, URDF

Embedded Embedded Linux, RTOS, Microcontrollers, DSP, Fieldbus, Distributed Controls

Education

Doctor of Philosophy (Ph.D.) Experimental High Energy Physics

H. H. WILLS PHYSICS LABORATORY, UNIVERSITY OF BRISTOL

Bristol, U.K.

1998 - 2001

Bachelor of Science (B.Sc.) Applied Physics (1st Class)

STAFFORDSHIRE UNIVERSITY

Stoke-on-Trent, U.K.

1995 - 1998

Bachelor of Arts (B.A.) Graphic Design (2nd Class)

LEEDS BECKETT UNIVERSITY

Leeds, U.K.

1989 - 1991

Courses

AMRx: Autonomous Mobile Robots

Core concepts and algorithms of Locomotion, Perception, Localization and Intelligent Navigation

ETH Zurich / edX

June 2021

Robotics Software Engineering Nanodegree

Autonomous robotic development in C++ with ROS and Gazebo Simulator.

Udacity

March 2021

Tensorflow: Advanced Techniques

Advanced computer vision, generative deep learning, custom layers and loss Functions, distributed training.

DeepLearning.AI

Feb. 2021

Applied Machine Learning in Python

Machine Learning, numpy, pandas, Scikit-learn, Classification, Clustering, Crossvalidation, Hyperparameters.

Michigan / Coursera

Apr. 2018

Applied Plotting, Charting and Data Representation in Python

Data Visualization, numpy, pandas, matplotlib

Michigan / Coursera

Feb. 2018

Machine Learning

Logistic Regression, Artificial Neural Networks, Machine Learning.

Stanford / Coursera

Jan. 2018

Functional Programming in Scala

Scala, Functional Programming, Apache Spark, Parallel Computing.

EPFL / Coursera

Dec. 2017

Certifications

01.2021 **Tensorflow Developer Certificate,**

Tensorflow.org

08.2017 **Oracle Certified Associate: Java SE8 Programmer,**

Oracle

05.2011 **Scrum Master,**

Scrum Alliance