ECT\* Nuclear TALENT School 2020

Trento, June 22 – July 10

Machine Learning applied to Nuclear Physics, experiment and theory

**Organizers**

Morten Hjorth-Jensen (Michigan State University and University of Oslo) – Daniel Bazin (Michigan State University) – Michelle Kuchera (Davidson College) – Sean Liddick (Michigan State University) – Raghuram Ramamujan (Davidson College)

**Students’ Coordinator and Advisor**

Morten Hjorth-Jensen (Michigan State University and University of Oslo)

Topics that will be covered, with an emphasis on applications to nuclear experiment and theory are

* Basic concepts of machine learning and data analysis and statistical concepts like expectation values, variance, covariance, correlation functions and errors;
* Estimation of errors using cross-validation and bootstrapping;
* Linear Regression and Logistic Regression;
* Dimensionality reductions, from PCA to clustering
* Neural networks and deep learning;
* Convolutional Neural Networks and classification problems
* Recurrent Neural Networks and Autoencoders
* Decisions trees, random forests and boosting methods
* Support vector machines and kernel transformations
* Bayesian Neural Networks

**Lecturers**

Daniel Bazin (Michigan State University) – Morten Hjorth-Jensen (Michigan State University and University of Oslo) -Michelle Kuchera (Davidson College) – Sean Liddick (Michigan State University) – Raghuram Ramamujan (Davidson College)

Applications

(same text)

TO CHANGE (last line of the paragraph): Professor Jochen Wambach – Director of ECT\* (email to Barbara Gazzoli, gazzoli@ectstar.eu)

Deadline for applications: April 13, 2020