

3rd 'GIOVANNI ANANIA' SUMMER SCHOOL ON EVIDENCE-BASED POLICY MAKING

“Machine Learning techniques in agricultural, food and environmental policy analysis”

13-17 July 2020, Rende (CS), Italy

Call for applications

BACKGROUND

On July 15th 2015 Giovanni Anania suddenly passed away. Giovanni was a pillar in the profession and a natural academic leader for young agricultural and international economics scholars. He also was an institutional leader, serving as president of the European Association of Agricultural Economists (EAAE), and at the University of Calabria, where he served as Head of the Department of Economics as well as a member of the University Executive Board.

To honor Giovanni, the Italian Association of Agricultural and Applied Economics (AIEAA), the Rossi-Doria Center and the University of Calabria have organized the 3rd edition of the Summer School for PhD students and young researchers, a constant focus in Giovanni's mentoring role.

OBJECTIVES

Machine learning (ML) now offers great potential for expanding the applied economist's toolbox. Data availability has dramatically increased and ML methods are well equipped to exploit large volumes of data more efficiently than traditional statistical methods. Researchers have developed and improved algorithms that push the boundaries of ML. The community has a strong open source tradition, including powerful DL libraries (e.g. tensorflow.org, pytorch.org) and pretrained models (e.g. VVGNet, ResNet), increasing the potential for adoption. In the past few years, economists have begun to realize that the predictive power of ML methods may not only be used as such, but can also improve causal identification. In this course, we introduce ML to applied economists by placing it in the context of standard econometric and simulation methods. We identify shortcomings of current methods used in agricultural and applied economics, and discuss both the opportunities and challenges afforded by ML to supplement our existing approaches.

The 3rd Giovanni Anania Summer School on Evidence-based policy making provides an introduction to the use of machine learning techniques and introduces students to their use in agricultural, food and environmental policy analysis.

APPROACH

The overall objective of the Summer School is to train young applied economists in the field of policy analysis. The approach is based on a close interaction between participants and senior economists.

The Summer School is organized as a series of theoretical lectures focused on methodological issues coupled with up-to-date empirical sessions focused on the computer-based applications of the same techniques.

Both young scholars and lecturers will be hosted and live together at the University of Calabria, in an informal environment, facilitating the sharing of experiences and expertise.

INSTRUCTORS

Kathy Baylis - University of Illinois, Urbana-Champaign, USA

Giovanni Cerulli – IRCeS-CNR, Rome, Italy

Gianluigi Greco – Università della Calabria, Rende, Italy

Thomas Heckeley – University of Bonn, Germany

Hugo Storm - University of Bonn, Germany

PROGRAMME

Monday, July 13

Intro, prediction versus estimation, overfitting and regularization

9:00-10:30 Lecture 1a: Introduction to ML basics

10:30-11:00 *break*

11:00-12:30 Lecture 1b: Penalized regressions

12:30-14:00 *lunch break*

14:00-15:30 **Lab 1a: Introduction to Jupyter Notebooks and summary stats using python**

15:30-16:00 *break*

16:00-17:00 **Lab 1b: Comparing OLS, LASSO, Ridge and ElasticNet**

17:00-18:00 **Unstructured lab time**

Tuesday, July 14

Trees, forests and how to not get lost (Interpretability vs complexity)

9:00-10:30 Lecture 2a: Tree-based methods

10:30-11:00 *break*

11:00-12:30 Lecture 2b: Interpretation

12:30-14:00 *lunch break*

14:00-15:30 **Lab 2a: prediction using tree-based methods**

15:30-16:00 *break*

16:00-17:00 Lab 2b: Interpretation using Effects Plots (PDP, ICE) and Shapley Values
17:00-18:00 Unstructured lab time

Wednesday, July 15

Neural networks

9:00-10:30 Introduction to Neural Networks
10:30-11:00 *break*
11:00-12:30 Neural networks for regression, binary classification, and multiclass classification
12:30-14:00 *lunch break*
14:00-15:00 Analysis of time series, advanced network architectures
15:00-15:30 *break*
15:30-17:00 Lab 3: Examples of Neural Networks on real-world data
17:00-18:00 Unstructured lab time

Thursday, July 16

Machine Learning for causal analysis

9:00-10:30 Lecture 4a: Model selection, Matching and Doubly robust regression
10:30-11:00 *break*
11:00-12:30 Lecture 4b: Overview of methods for causal ID
12:30-14:00 *lunch break*
14:00-15:30 Lab 4a: LASSO for model selection and PSM
15:30-16:00 *break*
16:00-17:00 Lab 4b: Double ML using LASSO as selection
17:00-18:00 Unstructured lab time

Friday, July 17

Superlearning Machine and Stata-Python Integration

9:00-10:30 Lecture 5: The ontology and practice of Machine Learning: an overview
10:30-11:00 *break*
11:00-12:30 Lab 5a: The superlearning machine for predicting economic outcomes
12:30-14:00 *lunch break*
14:00-15:30 Lab 5b: The Stata/Python integration for Machine Learning purposes
15:30-16:00 *break*
16:00-17:00 Unstructured lab time

ADMISSION

The Summer School welcomes applications by PhD students at any stage of their PhD as well as young researchers who have completed their PhD. Applicants are welcome from any areas of applied economics, with a preference for those specializing in agricultural, food, environmental, trade, and development economics. Given the highly interactive

activities planned at the School, the number of participants is limited to 50. Admission priority will be given to students of the AFEPA Consortium (www.afepa.eu), of the University of Calabria and of the University Roma Tre.

Please submit your curriculum vitae, and a letter of reference. Applications must be submitted in English using the attached form by **April 20th** to the following email address: summer.school.anania@gmail.com

Proposals will be reviewed by the Summer School Scientific Committee.

Notification of acceptance will be provided to applicants by **May 5**. The selected applicants are required to pay a registration fee (**220 euros** for regular participants and **170 euros** for AIEAA Members) by May 15th. After this deadline, the selected applicant who has not completed the registration will not be entitled to participate and the opportunity will be given to the next person in the selection ranking.

Students are expected to arrive on 12 July (afternoon/evening) and depart on 18 July 2020 (morning).

Certificates are provided to participants attending the entire school with information on course coverage.

VENUE

The Third Giovanni Anania Summer School will be held at the University of Calabria, Department of Economics, Statistics and Finance – Rende (Cosenza), www.unical.it, from 13th to 17th July 2020.

The registration fee will entitle the participants to full board and accommodation for the whole duration of the Summer School. Registrants are responsible for their own transportation to Rende. Further information will be available at http://www.desf.unical.it/summer_school_anania_2020.

SCIENTIFIC COMMITTEE

Anna Carbone, Tuscia University
Frédéric Gaspart, Université Catholique de Louvain
Thomas Heckelei, University of Bonn
Ruben Hoffmann, Swedish University of Agricultural Sciences, Uppsala
Rosanna Nisticò, University of Calabria
Donato Romano, University of Florence
Luca Salvatici, Roma Tre University
Paolo Sckokai, Università Cattolica del Sacro Cuore
Margherita Scoppola, University of Macerata

'GIOVANNI ANANIA' SUMMER SCHOOL APPLICATION FORM

FIRST AND MIDDLE NAME:

FAMILY NAME:

DATE OF BIRTH (dd/mm/yy):

CITIZENSHIP:

AFFILIATION:

POSITION:

ADDRESS:

POSTAL CODE:

CITY:

COUNTRY:

PHONE NUMBER:

FAX NUMBER:

E-MAIL:

URL:

NAME OF PHD PROGRAM:

DISSERTATION TOPIC:

COMPUTER PACKAGES
BACKGROUND (e.g., STATA,
GAMS, R, etc.):

According to article 10 of law no 675 dated 31 December 1996 and subsequent DLgs 196/2003, amending provisions on the "Protection of individuals and other subjects with regard to the processing of personal data", we inform you that the personal data provided by you will be used in accordance with the law mentioned above and with the concept of confidentiality that our activities comply with. With the following confirmation, the user express his/her consent to the use of his/her personal details for receiving information about the Summer School and for the participant list.