



Call for the expression of interest for a PhD position in the area of Causal Discovery

The MensXMachina (MXM) research Group of the Computer Science Department of the University of Crete invites outstanding students to express their interest for a fully funded PhD Scholarship position in the area of Data Science, particularly, in Causal Discovery, with a strong focus on applications in biology. The position will be part of the CAUSALPATH project 'Next Generation Causal Analysis: Inspired by the Induction of Biological Pathways from Cytometry Data' funded by the European Research Council (ERC), and will be supervised by Assoc. Prof. Ioannis Tsamardinos.

Expression of interest closing date:	<i>September 30, 2017</i>
Preferred starting date:	<i>November 1, 2017 (later starting date is possible)</i>
Duration:	<i>3 years</i>

About the project

Discovering the causal mechanisms of a complex system of interacting components is necessary in order to control it. Computational Causal Discovery (CD) is a field that offers the potential to discover causal relations under certain conditions from observational data alone or with a limited number of interventions/manipulations.

An important, challenging biological problem that may take decades of experimental work is the induction of biological cellular pathways; pathways are informal causal models indispensable in biological research and drug design. CAUSALPATH builds upon and further advances recent breakthrough developments in CD methods to enable the induction of biological pathways from cytometry and other omics data. The biological problem acts as our campus for general novel formalisms, practical algorithms, and useful tools development, pointing to fundamental CD problems: presence of feed-back cycles, presence of latent confounding variables, CD from time-course data, Integrative Causal Analysis of heterogeneous datasets and others.

Academic environment

The successful interested candidate will be asked to join the MXM Group led by Assoc. Prof. Dr. Ioannis Tsamardinos, which is part of the Computer Science Department of University of Crete. The University of Crete is ranked 51st in the The Times Higher Education (THE) annual list of the top 100 universities founded in the past 50 years. The Computer Science Department is located near Heraklion, the 4th largest city in Greece on the coast of the island of Crete.

The MXM group is a highly multi-disciplinary and multi-national team of about 15 students, post-docs and researchers maintaining numerous national and international collaborations with biology and medical academic departments. Group members are actively working on a variety of research fields for data analysis including, machine learning, artificial intelligence, causal discovery, statistics, modeling, software development and bioinformatics.



Requirements

We are looking for a bright, ambitious, energetic, hard-working student to join our efforts. The successful candidate should have:

- a Master's degree related to one of following areas: computer science, artificial intelligence, mathematics, statistics, physics or closely related area;
- excellent mathematical skills (especially in probability theory, statistics and linear algebra);
- excellent programming skills in at least one of the following languages: MatLab, R;
- a –preferably proven– understanding and knowledge in the field of machine learning;
- a strong interest in developing algorithms for the analysis of high-dimensional data;
- excellent grade transcripts and curriculum vitae;
- excellent communication skills in English both verbal and written; and
- willingness and commitment and ability to work in a cooperative environment.

Optional Requirements

- Experience with, or a demonstrable interest in, analysis of biological data and analysis of high dimensional data.
- Experience with algorithms, methods and analysis based on at least one of the following causal formalism, such as Bayesian Networks, Maximal Ancestral Graphs, Chain Graphs, Semi-Markov Causal Models, Structural Equations Models, Differential Equations, or functional analysis of causal relations.

Some of the things we offer

- competitive pay;
- very friendly, interactive and international working environment;
- new buildings and research facilities;
- access to high-performance and cloud computing facilities (GRNET).

Procedure

Interested candidates should send by email to mensxmachina@gmail.com the following material:

- Curriculum Vitae
- Statement of research qualifications and interests
- At least three reference contacts

Formal procedures will be announced by the University of Crete after the expression of interest closing date.

Further information contacts

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For information on the MXM Group and the grant:

www.mensxmachina.org, www.mensxmachina.org/causalpath