HAEC HELLENIC AMERICAN COLLEGE in cooperation with HellenicAmericanUniversity

Summer 2022 UG Fellowship program

Hellenic American University / College Project Descriptions

Project #1

Supervisors' names	Didoe Prevedourou
Project Title	Guiding Ethical Research and Design of XR Technologies and Applications
Estimated group size	3 students
Estimated duration (3 weeks/6 weeks)	3 or 6 weeks
Project description	Extended reality (XR) technologies, including AR, VR and mixed reality, will see pervasive and widespread adoption and revolutionize many aspects of everyday life in the coming decades. The autonomous and intelligent systems (A/IS) backbone enabling real-time personalization of any end-users' Extended Reality (XR) world raises a host of ethical and philosophical questions about the collection, control, and exploitation of user data within these ecosystems [1]. Ethical design is user-centered or human-centered, meaning that the design work is governed by the needs and problems experienced by users, instead of by a primary focus on what is technically possible and economically viable. The present project aims to study ethical concerns in the context of XR, where a./ the breadth of sensing in XR enables XR applications and platforms to process captured data toward unanticipated and unintended ends; b./ on-line harassment behavior can occur in social and multi-user VR and be quite impactful; and c./ virtual clones with full fidelity (indistinguishable from the human individual) can be created resulting in the replication of identity which can become unethical or problematic. Students will be asked to review a number of XR applications with the view to identify unintended negative consequences that could diminish human well-being, express their feelings and thoughts about the negative consequences and propose design guidelines and mechanisms to prevent or counter-act them. [1] The IEEE Global Initiative on Ethics of Autonomous and Intelligent Systems - Extended Reality in A/IS

Project #2

Supervisor's name	Sokratis Sofianopoulos
Project Title	Building a chatbot using Python and Machine Learning
Estimated group size	3-5 students
Estimated duration (3 weeks/6 weeks)	3 or 6 weeks
Project description	In this project, students will become familiar with the concepts of artificial intelligence and machine learning by creating a "Chatbot" program. The course begins by introducing Python as the programming language and the Pandas, Numpy and Scikit learn opensource libraries. We present general NLP techniques for training a chatbot and checkout libraries such as chatterbot that makes it easy to generate automated responses to a user's input. We will then try to create a chatterbot that answers the most frequent questions of first year students attending the university. Both analytical and computational tools will be employed. Familiarity with Python or any coding language will be an asset.

Project #3

Supervisor's name	Sokratis Sofianopoulos
Project Title	Collecting and analyzing data from Twitter using Python
Estimated group size	3-5 students
Estimated duration (3 weeks/6 weeks)	3 or 6 weeks

Project description	The primary focus of this project is on collecting twitter data and then using this data for natural language processing applications. Students will begin by learning the basic syntax and usage of the Python programming language. Afterwards, we will talk about web APIs and see first hand how we can use an API such as the one provided by Twitter to collect data. Finally, we will study NLP techniques such as data cleaning, text similarity and sentiment analysis and apply them to the collected twitter data. Both analytical and computational tools will be employed. Familiarity with Python or any coding language will be an asset.

Project #4

Supervisor's name	P. Kalozoumis
Project Title	Properties of photonic crystals and semiconductor devices in the presence of defects
Estimated group size	2-4 students
Estimated duration (3 weeks/6 weeks)	3 or 6 weeks
Project description	In this project, students will become familiar with the concepts of photonic crystals and semiconductor devices. These classes of materials have a tremendous impact on contemporary technology in the micro- and nano-scales. The study will initially focus on the properties of bulk materials of both classes. Then the study will turn to structures of finite size. Using techniques based on Transfer and Scattering Matrices, the students will investigate the reflection and transmission properties of 1D structures and how these are modified when defects break the periodicity. Both analytical and computational tools will be employed. Familiarity with Matlab, Mathematica or any coding language is desirable.

Project #5

Supervisor's name	P. Kalozoumis
Project Title	Propagation of light in nanophotonic waveguide structures
Estimated group size	2 students
Estimated duration (3 weeks/6 weeks)	3 weeks
Project description	In this project, students will become familiar with the concept of discrete optics. Devices based on this concept offer unique opportunities to control and manipulate the flow of light. In order to discretize light, we need to confine optical energy at distinct sites which are coupled to each other via a hopping amplitude. Students will study the basic elements of coupled mode theory and will investigate the propagation properties of light in waveguide arrays. The use of active materials, namely exhibiting loss or gain will also be considered. Both analytical and computational tools will be employed. Familiarity with Matlab, Mathematic or any coding language is desirable.

Project #6

Supervisor's name	Themis Kaniklidou
Project Title	Technocratic communication in political discourse
Estimated group size	2 - 3
Estimated duration (3 weeks/6 weeks)	3 or 6 weeks
Project description	This project looks to identify traces of technocratic communication in political discourse. It seeks to collect data on the use of lexical item *strategic* in collocational clusters and argues that these are often discursively deployed to assign overtones of centrist, neoliberal populism to a more traditional or "old"

	left-wing populist ideology. The project will investigate website, manifestoes and campaign material to retrieve the semantic associations established between the business domain, by using the lexical items *strategy* and *strategic,* and that of politics may be key for legitimizing policies underway and for fostering trust-building.

Project #7

Supervisor's name	Alessandra Sax
Project Title	Multicultural Counseling: Practicing as Competent Practitioners in Diverse Cultures
Estimated group size	2 to 4 students
Estimated duration (3 weeks/6 weeks)	3 weeks
Project description	In order to truly understand individuals that therapists/ educators work with, one must recognize many multi-cultural variables such as race, culture, gender, religion, sexual orientation, language and many more. Multi-cultural psychology or the multicultural model of human behavior encompasses more than issues concerning race, ethnicity or sexual orientation factors; it also includes socioeconomic status, physical disabilities, etc. (Sue et al., 2003) Mental health professionals must be up to date with their knowledge and skills on multicultural assessment and intervention which include the following four elements: 1) recognize cultural diversity, 2) understand the role that culture and ethnicity/ race play in the socio-psychological and economical development of ethnic and culturally diverse populations, 3) understand that socioeconomic and political factors significantly impact the psychosocial, political, and economic development of ethnic and culturally diverse groups and 4) help clients to understand/ maintain/ resolve their own sociocultural identification; and understand the interaction of culture, gender, and sexual orientation on behavior and needs (APA, 2005).

	Students engaged in this specific topic area, will not only gain a better understanding of multicultural counseling but will also have the opportunity to research a culture of interest and apply the above stated model in a theoretical cultural context. References: American Counseling Association. (2014). ACA Code of Ethics: U.S.A.: Author. Sue, D., Sue, D.W., Sue, S. (2003). Understanding abnormal behavior (Seventh Edition). Boston: Houghton Mifflin Company.

Project #8

Supervisor's name	Eugenia Arsenis
Project Title	DISCOVERING TOGETHER!
Estimated group size	2 to 4 students
Estimated duration (3 weeks/6 weeks)	3 or 6 weeks
Project description	Throughout this project, the students will discover more about Greek culture by exploring works of art from all fields. The course will combine visits in spaces that are related with art and culture, as long as, work in the classroom with texts written by the students after their visits. The aim is an intercultural exchange between Greek culture and the culture of the participants, by employing theatrical tools. The project will be completed with a performance – theatrical presentation by the students, as an outcome of their writing, inspired by the cultural spaces, that will be developed in the class with additional acting work. Yet, prior acting experience is not necessary.

Project #9

Supervisor's name	Damianos Giannakis
Project Title	Building a sound sales plan based on customer centric business approach
Estimated group size	3-5 students
Estimated duration (3 weeks/6 weeks)	3 weeks
Project description	In this project, students will become familiar with the development of an organizational sales plan considering the corporate strategic orientation, infrastructure of the sales force. Familiarity with principles of marketing and principles of management is an absolute requirement in attending and interacting in this project.

Project #10

Supervisor's name	G. Kontaxis
Project Title	Project Management
Estimated group size	3-5 students
Estimated duration (3 weeks/6 weeks)	3 weeks
Project description	In this course, students will become familiar with the Project Management methodology. They will develop plans for an IT project of their choice and learn how to monitor it.

	Participants will use MS Project to develop a Schedule and a Cost plan (Gantt Chart) and MS Visio for a Work Breakdown structure diagram.