TRENDS IN TECHNOLOGY FOR CX

Master in Customer Experience and Innovation MCXI OCT-2023 S-1

Area Marketing and Communication

Number of sessions: 12

Term: Term 2

Category: regular

Language: English

Professor: **EDUARDO CASTELLÓ FERRER**

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Prof. Eduardo Castelló Ferrer received the B.Sc. (Hons.) degree in intelligent systems from the University of Portsmouth (U.K.) in 2007, and the M.Eng. and Ph.D. degrees in robotics engineering from Osaka University (Japan) in 2011 and 2016, respectively. Dr. Castelló's experience and interests comprise robotics, cryptography, and complex systems. He was a Marie Curie Fellow at the MIT Media Lab, where he innovated the combination of distributed robotic systems and blockchain technology. In addition to his position as an assistant professor at IE, Dr. Castelló is a research fellow at the MIT Connection Science group where he focuses on implementing new security, behavior, and business models for robotics using novel cryptographic methods.

Office Hours

Office hours will be on request. Please contact at:

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SUBJECT DESCRIPTION

Technology is changing the way customers and companies interact every day. In this fast-paced environment, early adoption of technology when tailoring or adding value to customers often draws the line between failure and success. Competitive advantage no longer comes through the whimsical use of technology but through how technology solves the main challenges that customers/individuals face providing a response to human behavior, motivations, and situations.

LEARNING OBJECTIVES

We will cover the big technologies and trends of the moment and will develop your ability to think critically about the new technologies and trends you will encounter in the future. At least some of the major disruptions you will handle during your career are completely unpredictable right now, so you need the fundamental skills to think about the tech of tomorrow, not simply descriptions of the tech of today.

TEACHING METHODOLOGY

IE University teaching method is defined by its collaborative, active, and applied nature. Students actively participate in the whole process to build their knowledge and sharpen their skills. Professor's main role is to lead and guide students to achieve the learning objectives of the course. This is done by engaging in a diverse range of teaching techniques and different types of learning activities such as the following:

Learning Activity	**Weighting**
Lectures	30.0 %
Discussions	20.0 %
Exercises in class, Asynchronous sessions, Field Work	10.0 %
Group work	30.0 %
Individual studying	10.0 %
TOTAL	100.0 %

PROGRAM

SESSION 1 (LIVE IN-PERSON)

Introduction to Trends in Technology

In this session we will look at technologies that have emerged recently or are emerging now, in the example case study of the MIT Media Lab. We will look at how new technologies pass through hype cycles during their development and adoption and we will use the Gartner Hype Cycles for Emerging Technologies as a tool to understand this phenomenon. Finally, we will have a class discussion about which emerging technologies you see impacting your industries and fields, and the Teams will receive their assigned class discussion topics for Sessions 2-8.

SECTION: TECHNOLOGIES

Key technology trends

In this group of sessions, we will cover several of the current major technology trends and begin discussing how they might be applicable to products and services in your industries and fields.

SESSION 2 (LIVE IN-PERSON)

Artificial Intelligence

We will cover a brief history of AI, its recent high-profile innovations such as Large Language Models (LLMs), and several of its most important applications, including expert systems, natural language processing, speech recognition, and computer vision. We will then look at several case studies of AI used in products and services and, finally, one of the Teams will lead a class discussion on the implications of AI for customer experience and innovation.

SESSION 3 (LIVE IN-PERSON)

Healthcare, Biotech, and Data Privacy

We will look at several recent high-profile innovations in healthcare and biotechnology, such as CRISPR, robotic prostheses, biohybrids, and AI-supported mental healthcare. Complementarily, we will also cover data privacy. This session combines these topics because health-related data is often considered one of the most sensitive types of personal data. We will look at examples of: applications of user data collected with consent such as personalized advertising, privacy regulations such as GDPR, high-profile user data breaches such as users' DNA data at the genetic-testing firm 23andMe, and alternative user data paradigms such as data collectives and data philanthropy. Finally, one of the Teams will lead a class discussion on the implications of healthcare technologies and biotech for customer experience and innovation, and another Team will lead a class discussion on the implications of data privacy for customer experience and innovation.

SESSION 4 (LIVE IN-PERSON)

Blockchain, Decentralized Finance, and Web3

We will cover a brief introduction to the concept of a cryptographic ledger (a.k.a. a blockchain): a tamperproof sequence of data that can be read and augmented by users. We will look at several applications of blockchain technology, including cryptocurrencies and fintech, and important innovations such as smart contracts, Decentralized Autonomous Organizations (DAOs), Decentralized applications (Dapps), and zero-knowledge proofs. We will also look at new directions in the Web3 ecosystem, understanding what differentiates this new paradigm from previous approaches. Finally, one of the Teams will lead a class discussion on the implications of blockchain technologies and applications for customer experience and innovation.

SESSION 5 (LIVE IN-PERSON)

Robotics

We will cover a brief history of robotics as well as key concepts: perception, actuation, communication, autonomy, and intelligence. We will look at several high-profile types of robots, including humanoids, drones, cobots, autonomous vehicles, soft robots, and robot swarms, and look at trending research topics such as robot security and machine learning in robotics. We will also cover related smart or autonomous systems: cyber-physical systems, Internet of Things, smart devices, etc. Finally, one of the Teams will lead a class discussion on the implications of robotics for customer experience and innovation.

SESSION 6 (LIVE IN-PERSON)

Cloud Computing

We will cover a brief introduction to cloud computing, i.e., on-demand network access to shared computing resources. We will look at the primary use cases of cloud computing (data storage and computing power), widely adopted early examples (e.g., Google Docs), and the current surge in service options offered by platforms such as Amazon Web Services (AWS). We will also cover the related topics of Peer-to-peer (P2P) computing networks, edge computing, 5G, and the trends of Web 1.0, Web 2.0, Web 3.0. Finally, one of the Teams will lead a class discussion on the implications of cloud computing for customer experience and innovation.

SESSION 7 (LIVE IN-PERSON)

Virtual and Augmented Reality

We will cover a brief introduction to the concepts of VR / AR / MR / XR (Virtual, Augmented, Mixed, and Extended Reality) and look at different examples of these technologies. We will also look at the related technologies of computer vision, facial recognition/mapping, and body/motion tracking, as well as recently popular application ideas such as Digital Twins, personalized digital avatars, and the "Metaverse". Finally, one of the Teams will lead a class discussion on the implications of VR and AR for customer experience and innovation.

SESSION 8 (LIVE IN-PERSON)

Future Emerging Technologies

In this session, we will look at several examples of recent research advances that are suggestive of future emerging technologies (in other words, technologies that are not yet developed enough to start being adopted or to initiate a hype cycle, but could become important in the future). One of the Teams will lead a class discussion speculating on future emerging technologies that might become important for the future of customer experience and innovation. Finally, we will look at the pitches submitted by the Teams for how to apply technology to their term projects.

SECTION: PROJECTS

APPLICATION OF TECHNOLOGY TO YOUR TERM PROJECTS

SESSION 9 (LIVE IN-PERSON)

PROJECT SESSION

Presentations of your in-process work on your term projects.

Each Team will give an initial presentation (max. 5 minutes) and receive feedback from classmates and professor.

Project description

The CXO approach: Application of Technology to your final term projects. This is your time to shine!, as CXO, you will apply to your final projects one of the technologies from the class (or beyond) to enhance, change, or discover new ways of bringing value to the customer. As a real CXO, it is key that the technology used is thought of as an enabler and serves a purpose that can be showcased through your MVP.

SESSION 10 (LIVE IN-PERSON)

Security, intellectual property, & ethics

We will cover the topics of security, intellectual property, and ethics (including transparency and privacy) by looking at the example technologies of blockchain, robotics, and AI. First, we will look at what is or is not secure, transparent, and private about blockchain-based technologies and will look at security and safety in robots embedded in society. Then, we will look at the societal discussions currently being had about intellectual property rights and general ethics in AI.

SESSION 11 (LIVE IN-PERSON)

PROJECT SESSION

Presentations of your in-process work on your term projects.

Teams will be assigned into pairs at the beginning of the session. Paired Teams will present to and give feedback to each other, assisted by the professor. By the end of the session, each Team will submit their feedback comments for their partner Team.

Project description
The CXO approach: Application of Technology to your final term projects. This is your time to shine!, as CXO, you will apply to your final projects one of the technologies from the class (or beyond) to enhance, change, or discover new ways of bringing value to the customer. As a real CXO, it is key that the technology used is thought of as an enabler and serves a purpose that can be showcased through your MVP.

SESSION 12 (LIVE IN-PERSON)

FINAL PRESENTATIONS

Each Team will give their final presentation (max. 5 minutes) and receive feedback from the professor and a guest jury.

Project description
The CXO approach: Application of Technology to your final term projects. This is your time to shine!, as CXO, you will apply to your final projects one of the technologies from the class (or beyond) to enhance, change, or discover new ways of bringing value to the customer. As a real CXO, it is key that the technology used is thought of as an enabler and serves a purpose that can be showcased through your MVP.

EVALUATION CRITERIA

Class participation
Each session will include time for discussion, and class participation is an important part of the evaluation. During Sessions 2-8, each Team will lead a class discussion on the implications of technology for customer experience and innovation and afterwards each Team member will individually submit their conclusions about the discussion (due before the next session). The topics of the class discussions will be assigned during Session 1.

Application of technology to your term projects
Your application of technology to your term projects will be evaluated in several phases.

- **Before Session 8:** Each Team will submit a pitch (max. 1 page) of how you will apply technology to your MVP. Due date forthcoming.
- **Project development, Session 9:** Each Team will give an initial presentation (max. 5 minutes) and receive feedback from classmates and professor. Presentations will be given during Session 9 and the presentation files (slides, etc) are due before the session.
- **Project development, Session 11:** During Session 11, pairs of Teams will present to and give feedback to each other, assisted by the professor. By the end of the session, each Team will submit their feedback comments for their partner Team.
- **Final presentations, Session 12:** Each Team will give their final presentation (max. 5 minutes) and receive feedback from the professor and a guest jury. Presentations will be given during Session 12 and the presentation files (slides, etc) are due before the session.

Individual evaluation
Each Team member must speak in a significant way in at least one of the following: the Team-led class discussion, the initial project presentation in Session 9, or the final presentation in Session 12.
Before the end of the course, each Team member will also submit an individual evaluation of their own and their teammates contributions to the group work throughout the course.

criteria	percentage	Learning Objectives	Comments
Group Work	40 %		Application of technology to your term projects. Evaluation will include your pitch, initial presentation, final presentation, your feedback given to other groups, and how well you developed your project and applied the feedback you received during the intermediary phases.
Individual work	40 %		Individual contributions to the application of technology to your term projects. Evaluation will be based on the same criteria as the group work.
Class Participation	20 %		Evaluation will be based on your group-led class discussion and your individual conclusions submitted afterwards.

FAILING GRADE AND REASSESSMENT

When students receive a Fail in a course, they have the opportunity to present themselves for reassessment in order to earn the necessary credits toward graduation.

The reassessment of students should be scheduled between 5 and 10 working days after the review session takes place.

Grades for the reassessment are limited to a Low Pass and Fail.

Both, the initial Fail as well as the grade of the reassessment remain on the transcript. For the purpose of calculating the GPA however, only the grade of the reassessment is to be considered. Students receiving a failing grade in the reassessment of a course will not be able to continue in the program.

BEHAVIOR RULES

Please, check the University's Code of Conduct here. The Program Director may provide further indications.

ATTENDANCE POLICY

Please, check the University's Attendance Policy here. The Program Director may provide further indications.

ETHICAL POLICY

Please, check the University's Ethics Code here. The Program Director may provide further indications.