

**Class title:** AI for Good

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**Class meeting:** 2X per week (75-minute class periods)

## Description

Traditional strategies to fight against poverty, inequality and climate change have proved ineffective in the last decades. New and creative solutions are required where cutting-edge technological innovation and multidisciplinary work serve the common good.

In this course, you will explore the state of the art in AI business development and its ethical implications in relation to current global societal and environmental challenges. You will reflect on your individual role in society and develop critical thinking about the current socio-technical value system. Our readings will include original works of philosophers, economists and computer scientists as well as examples of state-of-the-art AI supported business and institutional projects. As a result of the readings and class discussions, you will acquire well-informed understanding about the implications of the AI Trustworthy principle of justice and fairness, including non-discrimination and avoidance of unfair bias. You will become aware of the potential for AI to contribute, if well managed, towards fairer and more sustainable societies as well as the dangers it entails to widen inequalities and aggravate the discrimination suffered by vulnerable communities.

This is a hands-on course where you will be ideating and planning projects for the social good. I will accompany you in the development of business plans where ethics is the driver and AI is the key instrument. I will help you define your project idea in line with the United Nations Sustainable Development Goals (UN SDGs). Therefore, your projects will be designed to work towards mitigating poverty, reducing gender and race inequality, combating climate change, improving the sustainability of cities and communities, ensuring affordable and clean energy, achieving responsible consumption and production, improving the quality of education, providing better health and well-being services, ensuring decent work and economic growth or promoting peaceful and inclusive societies.

The goal of the course is to encourage and support you, as new entrepreneurs and future leaders, to work in multidisciplinary teams and develop interdisciplinary skills, being able to take advantage of new technology to create and manage projects for ethics in action.

## Course Objectives

In this course, you will:

- Reflect on your professional goals and your role in the current socio-technical system.
- Become aware of the state of the art in the area of AI and how it is changing the value chains and business models of different industries as well as societal habits and values.
- Develop a small business plan for a seed project with the objective to take action towards the UN SDGs, by taking advantage of the tools offered by AI.
- Analyze the difficulties in meeting the United Nations Sustainable Development Goals (UN SDGs) and in mitigating the challenges generated by AI.

- Understand the nature of prejudice, discrimination, stereotypes and bias, how these are affected by AI and develop a critical thought about intersectional types of exclusion in terms of poverty and digital illiteracy.
- Develop the capacity to have constructive conversations about the ethical impact of technology and AI in particular.

## Required Material

Course packet of readings. Articles and other materials on Canvas. Please be sure to check the course website and syllabus frequently.

## Course Format, Assignments, Evaluation and Grading

### *Format*

We will run the classroom as a discussion on the readings and as a working space where I will accompany you to develop your project ideas and plans (Lab sessions). You should be prepared to contribute based on the course readings and carry out hands-on work in your projects. You will work in the projects in groups of 4 students, which you will create during the course according to the affinities on the topics you would like to develop. I recommend that you work with students from different disciplines, to complement each other. Please ensure that you study and reflect on the readings that are assigned. This course has no final exam, so it is key that you attend each class, including the Lab sessions, in which I will be helping each group to develop your specific project and solve the obstacles that you will encounter.

### *Performance Measurements*

- Discussions participation 20%
- Individual memo 20 %
- First presentation and report 15%
- Second presentation and report 15%
- Final presentation and report 30%

### **Discussions participation (20%)**

The readings have been chosen to provide a rich discussion in which I am expecting you to have informed and alternative opinions. In this class we are trying to generate projects that improve the world that surrounds us. Therefore, the first step is to have a critical point of view about what it is that we would like to change.

### Participation Rubric

	No credit	Partial Credit	Full Credit
Spoke	Nothing		Contributed to case discussion
Use of theory	No theory	Some theory	Actual theory assigned that day
Link to other examples			
Other	Use of phone		Give voice to alternative view

**Individual memo (20%) (due on week 13)**

Each student is expected to submit a written memo based on one of the readings. The memo is 1-2 pages and will analyze the reading, offering a critical point of view by using the rest of the readings of the course (which will need to be referenced within the memo).

**Individual Memo Rubric**

	<b>No credit</b>	<b>Partial Credit</b>	<b>Full Credit</b>
Reasoning using other course bibliography 50%	No course readings mentioned	Mention of course readings	Opinions based on course readings
Offering critical opinion 50%	No critical opinion offered	Critical opinion offered but not based on course readings	Alternative voice offered referencing course readings

**First group project presentation 15% (due on week 4)**

In the first group presentation you will be explaining your project idea and mission statement. You will present arguments about the need for the project and what societal problems you are trying to solve. You will also introduce the team members and explain why you are the right persons to carry out this project. The rest of the class and myself will act as potential investors, give you feedback and ask you questions related to the interest and viability of the project. The grade will reflect the contents of the presentation (70%) and also your presentation skills (30%).

**Second group project presentation 15% (due on week 10)**

The second project group presentation will include: project idea, societal benefits, business model, market research and marketing plan. In this case, I will grade the contents (60%), presentation skills (20%) and how you have addressed the feedback received on the first presentation (20%).

**Final presentations and report of the AI for Good Projects 30% (due on week 14)**

At the end of the course, each project group will present the project idea, societal benefits, business model, market research, marketing plan, implementation workplan, team management plan, financial overview, investment needs, foreseen breakeven point and offering to potential investors. As in the previous 2 presentations, I will grade the contents (60%), presentation skills (20%) and how you have addressed the feedback received on the second presentation (20%). The day of the final presentation you will also hand in a report describing the different sections of the project plan.

**Grading**

The final course grade is based on:

<u>Percentage of Course Points Earned</u>	<u>Grade Earned</u>
93.0 % and above	A
from 90.0 % but less than 93.0 %	A-
from 87.0 % but less than 90.0 %	B+
from 83.0 % but less than 87.0%	B
from 80.0 % but less than 83.0%	B-
from 77.0 % but less than 80.0 %	C+
from 73.0 % but less than 77.0 %	C
from 70.0 % but less than 73.0 %	C-
from 60.0 % but less than 70.0 %	D
less than 60.0%	F

## Schedule

Schedule	Topic	Readings. Compulsory readings are marked (*)
Week 1	<b>Class 1</b> – Introduction. What is AI? Performability vs societal change and AI for Good.	<p>(*) Correa, F. AI Knowledge Map: How to Classify AI Technologies.</p> <p>(*) Sandel, M. The Tyranny of Merit. Introduction and chapter 1.</p> <p>(*) Lyotard, J.F. The Postmodern Condition: A Report on Knowledge, Introduction and pages 3 – 6.</p>
	<b>Class 2</b> - Current global challenges and the role of AI in relation to the UN Sustainable Development Goals.	<p>(*) Sen, A. Development as Freedom. P. 4 – 15.</p> <p>(*) Vinuesa, R., Azizpour, H., Leite, I., Balaam, M., Dignum, V., Domisch, S., et al. The role of artificial intelligence in achieving the Sustainable Development Goals</p>
Week 2	<b>Class 3</b> - Potential societal and business opportunities generated by AI.	<p>(*) Floridi, L. What the Near Future of Artificial Intelligence Could Be.</p> <p>(*) Harding, V., Ibrahim, L., Isaac W., and Chiappa S. Deepmind the Podcast: Episode 6: AI for everyone.</p> <p>(*) Ray T. (2022). Machines that think like humans: everything to know about AGI and AI Debate.</p>
	<b>Class 4</b> - How is AI changing industry structures, societal habits and values.	<p>(*) Zuboff, S. The Age of Surveillance Capitalism. Chapter 1.</p> <p>(*) Fry, H. (2018). Hello world : being human in the age of algorithms. Penguin (p. 25-47)</p> <p>Crawford, K., &amp; Calo, R. There is a blind spot in AI research.</p> <p>Myers, A. Dialing in Patient Attitudes: The Ethics of AI in Medical Decision-making.</p> <p>Epstein R. Robertson, R.E. The search engine manipulation effect (SEME) and its possible impact on the outcomes of elections.</p> <p>Sweeney L. Discrimination in online ad delivery.</p>

Week 3	<p><b>Class 5</b> - How big industry actors are adapting to AI.</p>	<p>(* FastCompany. Walmart rolls out a new AR feature to let you try on clothing virtually.</p> <p>(* Halleluya Hadero. Amazon keeps growing, and so does its cache of data on you.</p> <p>Markoff, J. Should your driveless car hit a pedestrian to save your life?</p> <p>Paul Prior. Phygital. What is it and why should I care?</p>
	<p><b>Class 6.</b> How projects and startups take advantage of AI to work towards the UN SDGs.</p>	<p>Choose and read a minimum of 3 of the following projects:</p> <p>(* AI4good.org. The LifeForce Project. Helping Ukrainians locate crucial supplies and information.</p> <p>(* AI4good.org. Goal 7: Affordable &amp; Clean Energy.</p> <p>(* AI4good.org. Meet xFarm: The Swiss start-up that is digitizing the agriculture industry</p> <p>(* AI4good.org. Mapping and connecting schools. How AI is being used to close the digital divide.</p> <p>(* Cantwait.IDEO. Case study: Bendable. South Bend lifelong learning platform designed by users.</p> <p>(* Cantwait.IDEO. Case Study: Northern Illinois Food Bank.</p>
Week 4	<p><b>Class 7.</b> AI projects in a global environment. The gap between the Global North and Global South in AI development.</p>	<p>(* Kannan, P. Neema Iyer: Digital Extractivism in Africa Mirrors Colonial Practices</p> <p>(* Garcia, E.V. The International Governance of AI: Where is the Global South?</p> <p>Smialowski, T. and Ochnio, L. Economic contexts of differences in digital exclusion</p> <p>Carman, M., &amp; Rosman, B. Applying a principle of explicability to AI research in Africa: should we do it?</p>
	<p><b>Class 8.</b> First group project presentation: AI for Good business idea proposal and mission statement</p>	
Week 5	<p><b>Class 9.</b> The business plan, business model innovations and market research in the AI for Good context.</p>	<p>(* Bernard Marr. The future of social media In the Metaverse</p> <p>(* Krishna. S. Midjourney founder says 'the world needs more imagination</p>
	<p><b>Class 10.</b> Lab. Business model and market research.</p>	

Week 6	<p><b>Class 11.</b> Why are we biased? The nature of hat bias, discrimination, prejudices and stereotypes.</p>	<p>(*) Allport, G.W. The nature of prejudice. Pages 3 – 28.</p> <p>(*) Kahneman, D. Thinking fast and slow. Pages 3 – 15.</p> <p>(*) Young, I.M. Justice and the politics of difference. Pages 3 – 14.</p>
	<p><b>Class 12.</b> Trustworthy AI principles. The principle of justice and fairness, including diversity, non-discrimination and avoidance of unfair bias. Gender and racial discrimination.</p>	<p>(*) Coeckelbergh, M. The Political Philosophy of AI. Chapter 3 (Equality and Justice: Bias and Discrimination by AI).</p> <p>(*) Ramos Patiño, G. Why we must act now to close the gender gap in AI.</p> <p>(*) Angwin, J, Larson, J, Mattu, S. and Kirchner, L. Machine Bias. There's software used across the country to predict future criminals. And it's biased against blacks.</p> <p>Bolukbasi T, Chang K-W, Saligrama V, et al (2016) Man is to Computer Programmer as Woman is to Homemaker?</p> <p>Nadeem, M., Bethke, A., &amp; Reddy, S. (2020). StereoSet: Measuring stereotypical bias in pretrained language models.</p>
Week 7	<p><b>Class 13.</b> Lab. Trustworthy AI principles.</p>	
	<p><b>Class 14.</b> Intersectional discrimination and algorithmic reparation.</p>	<p>(*) Hoffmann, A. L. (2019) 'Where fairness fails: data, algorithms, and the limits of antidiscrimination discourse.</p> <p>(*) Jenny L. Davis, Apryl Williams and Michael W. Yang. Algorithmic Reparation.</p> <p>Curto, G., Jojoa Acosta, M., Comim, F., &amp; Garcia-Zapirain, B. (Are the poor being discriminated against on the Internet? A machine learning analysis using Word2vec and GloVe embeddings to identify aporophobia.</p> <p>J.P. Lalor. Benchmarking Intersectional Biases in NLP.</p>
Week 8	<p><b>Class 15.</b> What is design thinking and how can it help us in our projects.</p>	<p>(*) Tim Brown urges designers to think big. TED Talk.</p> <p>(*) What is design thinking. The design thinking toolkit.</p>
	<p><b>Class 16.</b> Hands-on design thinking exercise.</p>	<p>(*) Schwall, S. The Future of the Midwest – “Horses, Humans &amp; Computers”.</p>

Week 9	<b>Class 17.</b> Using AI for a marketing plan and defining the marketing in an AI for Good context.	(*) Davenport, Thomas H.; Guha, Abhijit; Grewal, Dhruv. How to Design an AI Marketing Strategy What the technology can do today—and what’s next.  (* ) Raj Venkatesan and Jim Lecinski. The AI Marketing Canvas. A Five-Stage Road Map to Implementing Artificial Intelligence in Marketing. Part 2. AI and marketing essentials and Part 3. The AI marketing canvas
	<b>Class 18.</b> Lab. Marketing plan.	
Week 10	<b>Class 19.</b> Second project group presentation: business idea, business model, market research and marketing plan.	
	<b>Class 20.</b> Design and launch of the AI with the participation of legitimate stakeholders.	(*) Martin, K. Ethical Implications and Accountability of Algorithms.  (* ) Martin, K. and Phillips, R.A. Stakeholder Friction.
Week 11	<b>Class 21.</b> Lab. Implementation work plan.	
	<b>Class 22.</b> How to manage an international multidisciplinary team remotely	(*) Ord, P. How to best manage your hybrid workforce.  (* ) The economist. How to make hybrid work a success.
Week 12	<b>Class 23.</b> Lab. Team members’ goals and incentives.	
	<b>Class 24.</b> The financial plan of an AI for Good Project. How to obtain investment and what are the investors looking for.	(*) Cheishvili, A. Top Five Ways AI Is Revolutionizing The Financial Planning Industry
Week 13	<b>Class 25.</b> Lab. Financial overview and offering to potential investors.	
	<b>Class 26.</b> Course final discussion and conclusions.	(*) Verhulst, S. Data responsibility: using corporate data to improve our lives (TED Talk)  (* ) Floridi, L., Cowls, J., Beltrametti, M., Chatila, R., Chazerand, P., Dignum, V., et al. AI4People-An Ethical Framework for a Good AI Society.
Week 14	<b>Class 27.</b> Final presentations and report of the AI for Good Projects.	
	<b>Class 28.</b> Final feedback on the presentations and next steps.	

## Readings' references

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