Syllabus

Artificial Intelligence and Policy Tools

人工智慧與政策工具

Spring 2025

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I. INTRODUCTION

The development of artificial intelligence (AI) grows rapidly, making profound impacts on people's welfare and governmental operations. However, policies and laws concerning AI regulation has still presented a mismatch with its technological potentials. This course "Artificial Intelligence and Policy Tools" is directed primarily to training decision-making professionals working at the intersection of technology and policy in preparation for the emerging era of ubiquitous AI. Issues concerned in the course includes why and how to regulate AI form national and global perspectives. Regulatory Modles developed or in developing will be assessed in its merits and deliberative process, with a focus on the development of policy tools in public governance and private domain as well.

This course will involve relevant literature and project for presentation and discussions. Both the instructor and students are all expected to embrace these materials and to engage in dialectical learning. At the end of the semester, students are required to submit a project report with ideas inspired or developed during the class.

II. COURSE GOAL

1.To train decision-making professionals working at the intersection of technology and policy in preparation for the emerging era of ubiquitous AI

2. To formulate a general analytic framework for AI policy and regulation in preparation for the emerging era of ubiquitous AI

III. COURSE SCHEDULE

The Course is divided in two parts, instructed by Professor Yeh for the first part and and Professor Kung for the second part. The first part, weeks1-7, on policy and regulation, aims at a general understanding of AI policy formation and regulatory

framework. The second part, Week 8-11, technology and system, is directed to a working comprehension of AI technology system and policy tools.

2/19 Week 1 AI Technology, Policy, Law and Regulation

Prof. Jiunn-rong Yeh

Progress and Regulation, Technology Policy and Institutions, Regulating Technology, AI Legislation: Basic Law and Others, EU Artificial Intellegence Act, AI in Technology, Information, Data and Speech

Žiga Turk, *Regulating Artificial Intelligence: A Technology-Independent Approach*, 23 EUROPEAN VIEW 87 (2024).

Dmitryi L. Kuteynikov & Osman A. Izhaev, *Analysing Risk-Based Approach in the Draft EU Artificial Intelligence Act*, 4 LEGAL ISSUES DIGIT. AGE 97 (2023).

2/26 Week 2 Regulatory Goal and Deliberation: Progress and Externalities

Prof. Jiunn-rong Yeh

AI: Benefit and Risk, Red-light v. Green-light Rules, AI and National Competitiveness, Ai Souvereignty, AI Toxics, Black Box, and Discrimination, Externalities and Human Rights, Privacy, Transparency and Stakeholder Participation.

Keri Grieman & Joseph Early, *A Risk-Based Approach to AI Regulation: System Categorisation and Explainable AI Practices*, 20 SCRIPTED 56 (2023).

Isabel Kusche, *Possible Harms of Artificial Intelligence and the EU AI Act: Fundamental Rights and Risk*, JOURNAL OF RISK RESEARCH 1 (2024).

3/5 No Class

3/12 Week 3 AI Regulatory Regime: Goal and Tools

Prof. Jiunn-rong Yeh

Risk-based Regulation, Risk and Categorization, Property Rights, Permitting, Standard-setting, Economic Incentives, Sand box

Jyh-An Lee, *Algorithmic bias and the New Chicago School*, 14 LAW INNOVATION & TECH. 95 (2022).

Miriam Buiten etc., *The Law and Economics of AI Liability*, 48 COMPUTER LAW & SECURITY REVIEW (2023).

3/19 Week 4 AI Regulation: Public and Private Domains

Prof. Jiunn-rong Yeh

Corporate Responsbility, Command and Control, Market Mechanism, Incorporation of Private Rules, AI Sovereignty, AI Deliberation, Autonomy and Humanity, AI and Global Order

Daniel Mügge, *EU AI Sovereignty: For Whom, to What end, and to Whose Benefit?*, 31 JOURNAL OF EUROPEAN PUBLIC POLICY 2200 (2024).

Martin Petrin, AI, *New Technologies, and Corporate Governance: Three Phenomena*, 47 SEATTLE U. L. REV. 1639 (2024).

3/26 No Class

4/2 No Class

4/9 No Class

4/16 Week 5 AI: Impact Assessment

Prof. Jiunn-rong Yeh

AI in Government Functions, FDA New Drug Review, Job Displacement, Legitimacy and Liberty, Accountability and Integrity

Andrew D. Selbst, *An Institutional View of Algorithmic Impact Assessments*, 35 HARV. J. L. & TECH. 117 (2021)

Claudio Novelli etc., *Accountability in Artificial Intelligence: What It is and How It Works*, 39 AI & SOCIETY 1871 (2023).

4/23 Week 6 AI: Finance and Liability

Prof. Jiunn-rong Yeh

Tax or Fees, AI Insurance, Property Rule, Liability Rule and Rule of Inalienability, Causation, Injury in Fact, AI Fund

Anat Lior, *Insuring AI: The Role of Insurance in Artificial Intelligence Regulation*, 35 HARV. J. L. & TECH. 467 (2022).

Beatriz B. Arcila, *AI Liability in Europe: How Does it Complement Risk Regulation and Deal with the Problem of Human Oversight?* 54 COMPUTER LAW & SECURITY REVIEW (2024).

4/30 Week 7 AI in Global Regulatory Order

Prof. Jiunn-rong Yeh

Models of Regulation, Regulating International Transfer of Technology, Global AI Networking, Global Administrative Law, Mega Regulation, International Trade, Health, and Environmental Regulation

Scott J. Shackelford & Rachel Dockery, *Governing AI*, 30 CORNELL J. L. & PUB. POL'Y 279 (2020).

Yoshija Walter, *Managing the Race to the Moon: Global Policy and Governance in Artificial Intelligence Regulation—A Contemporary Overview and an Analysis of Socioeconomic Consequences*, 4 DISCOVER ARTIFICIAL INTELLIGENCE 14 (2024).

5/9 Week 8 AI Technology

Prof. H. T. Kung

Pre-Trained AI Models for Computer Vision and Natural Language Processing, Model Alignment, Fine-Tuning, Prompt Engineering, Industrial Applications, Risks in Using AI, Societal Impacts, AI Sovereignty, and National Competitions

5/16 Week 9 AI Systems

Prof. H. T. Kung

AI Training and Inference, Data Curation, AI Chip Development, Taxonomy and Benchmark Development in Model Localization, System Deployment, open-Source Approaches, and Safety

5/23 Week 10 Policy Tools

Prof. H. T. Kung

AI Resource Sharing, Talent Nurturing, Energy Provisioning, Education Adaptation, International Trading of Model and Data Asset, AI Safety, Model Security, Data Privacy, Technology Decoupling, and Resilient Supply Chains

5/30 No class

6/4 Week 11 Presentation and Discussion

Prof. H. T. Kung

Final Project Presentations and Report Discussions

Course Projects

Via course projects, students develop short position papers on novel ideas at the intersection of technology and policy to address national challenges. Below are example project topics:

- Trade and technology policies on Taiwan's import/export of AI foundation models
- Data policies for supporting AI model localization and alignment
- Modifying traditional trade policy levers for AI model and data assets
- Energy policy in accommodating large-scale inference requests from humans and devices
- Sharing of human and computing resources in model training and fine-tuning
- Enhancing security and privacy in remote AI inference
- Taxonomies characterizing Taiwan's democratic values and the associated

benchmark development
- Incentives for investing in validating functionalities and security of AI models and their continuous upgrading
- Resilient AI supply chains under geopolitical uncertainties
- Education policy on the use of Chat GPT in grade schools
- Strategies for mitigating AI-induced digital divides
- Comparative analysis for an archetypal set of nations such as Taiwan, US, China, Japan, South Korea, and India