

Перелік дисертаційних робіт на здобуття ступеня доктор філософії за спеціальність 051 Економіка, що захищались протягом 2020-2024 років

Прізвище здобувача	Шифр разової спеціалізованої ради	Тема дисертаційної роботи	Керівник
Савчук Л. М.	ДФ 20. 052.007	Економічні засади забезпечення сталого розвитку сфери охорони здоров'я України	проф. Кінаш І.П. (2020)
Ставнича Н. І	ДФ 20.052.008	Соціальна безпека України в контексті забезпечення сталого розвитку	проф. Дзьоба О.Г. (2021)
Столяр О. О	ДФ 20.052.009	Удосконалення механізму тарифоутворення газорозподільних підприємств	проф. Перевозова І. В. (2021)
Швед О. М.	ДФ 20.052.010	Управління розвитком послуг газопостачання побутовим споживачам	проф. Перевозова І. В. (2021)
Буй Ю.В.	ДФ20.052.035	Розвиток соціальних інновацій на регіональному рівні	проф. Антонюк Д. А. (2024)

DR LUKAS WESEMANN: "The promise and perils of AI in academia"

Marek Łukasik

Lukas Wesemann

Paulina Pawłuszek

Maciej Koczerga

Adriana Biedron

Marek Łukasik

Adriana Biedron joined 0:00

10:51 AM | Talk: Lukas Wesemann (University of Melbourne) - ...

В ЭФИРЕ Прокрутите экран вниз, чтобы посмотреть подробную информацию

Marek Łukasik

Lukas Wesemann

Marta Gierczyńska-Kolas

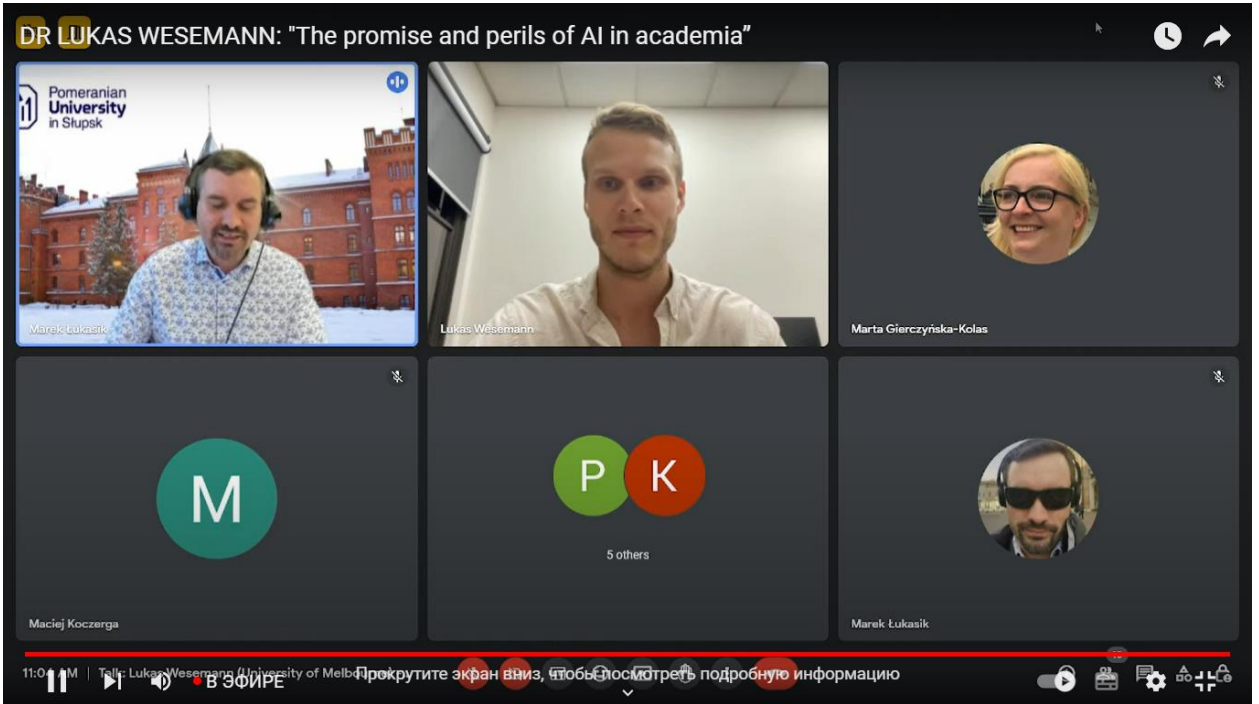
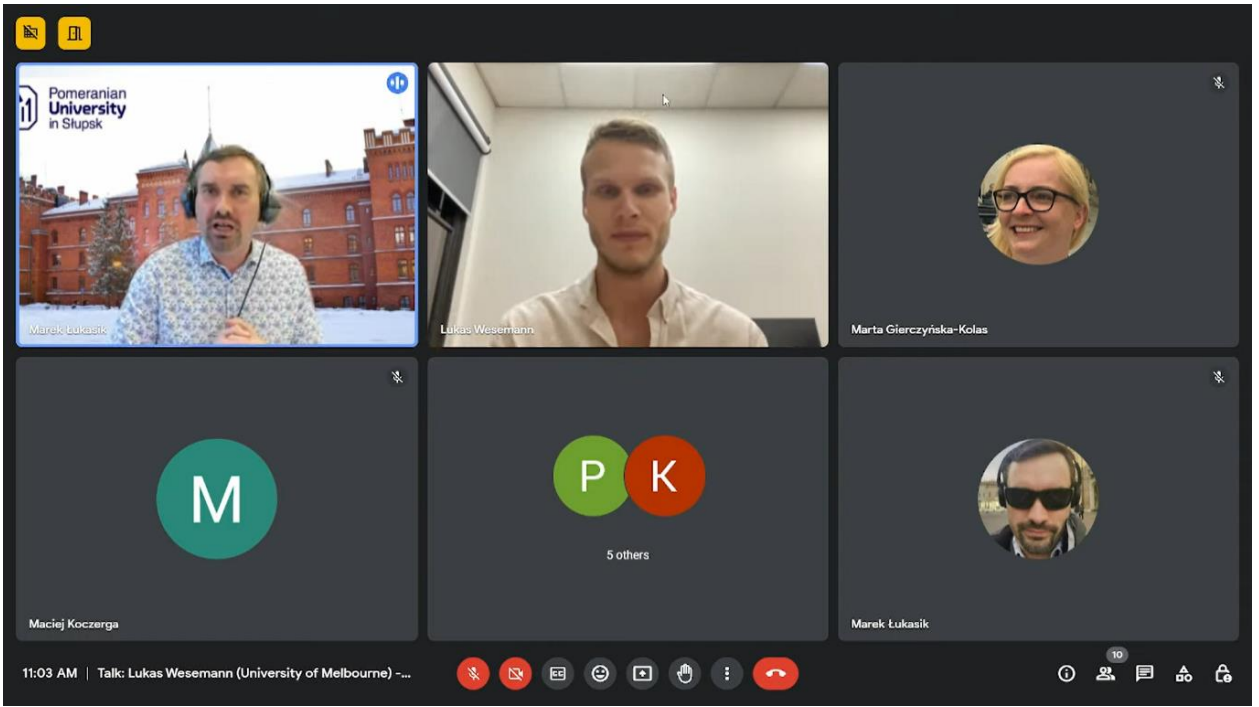
Maciej Koczerga

5 others

Marek Łukasik

11:01 AM | Talk: Lukas Wesemann (University of Melbourne) - ...

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Lukas Wesemann (Presenting)

The Promise and Perils of AI in Academia

Lukas Wesemann
University of Melbourne, Australia

11:06 AM | Talk: Lukas Wesemann (University of Melbourne) ~...

Participants: Lukas Wesemann, Marek Łukasik, Marek Bednarz, Marta Gierczyńska-K..., 5 others, Marek Łukasik

Lukas Wesemann (Presenting)

A wild year for AI (in Academia)

ChatGPT reaches 100 million users two months after launch

Unprecedented take-up may make AI chatbot the fastest growing consumer internet app, says analysis

Global Generative AI VC Investment

Year	Investment (\$B)
2010	0.0
2011	0.0
2012	0.0
2013	0.0
2014	0.0
2015	0.0
2016	0.0
2017	0.0
2018	0.0
2019	0.0
2020	0.0
2021	0.0
2022	0.1
2023	1.6

Elon Musk and Others Call for Pause on A.I., Citing 'Profound Risks to Society'

More than 1,000 tech leaders, researchers and others signed an open letter urging a re-evaluation on the development of the most powerful artificial intelligence systems.

RESEARCHERS REVEAL THAT PAPER ABOUT ACADEMIC CHEATING WAS GENERATED USING CHATGPT

THE WORST PART? IT PASSED PEER REVIEW

Guidance for generative AI in education and research

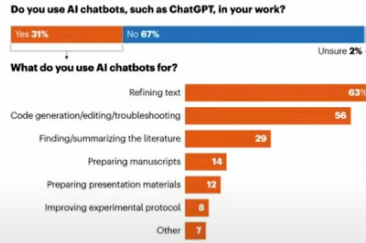
Australian Government
Tertiary Education Quality and Standards Agency

erc European Research Council
Established by the European Commission

Responsible AI
Your questions answered

Натисніть Esc, щоб вийти з повноекранного режиму

Are academics using generative AI?



'AI and Science', Nature, September 2023

Zoom meeting grid showing participants: Lukas Wesemann, Marek Łukasik, Marek Bednarz, Marta Gierczyńska-K..., 5 others, and Marek Łukasik.

Generative AI

- **Artificial Intelligence (AI)**
The simulation of human intelligence in machines programmed to think and learn like humans.
- **Generative AI (GenAI)**
AI that creates new data similar to a given dataset.

Writing



Image & Video Generation



Code generation



Multimedia



Zoom meeting grid showing participants: Lukas Wesemann, Marek Łukasik, Marek Bednarz, Marta Gierczyńska-K..., 5 others, and Marek Łukasik.

Lukas Wesemann (Presenting)

Multimodal GenAI

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11:10 AM | Talk: Lukas Wesemann (University of Melbourne) - ...

Maciej Koczerga
ChatGPT (3.5) provides sometimes incorrect or fabricated information

Lukas Wesemann (Presenting)

Large Language Models & ChatGPT

LLM's

- Deep Artificial Neural Networks
- 'Understand' and generate natural human language.
- Transformer Architecture

What they are not

- Understanding based on statistical associations rather than conceptual understanding

The best thing about AI is its ability to

learn	4.5%
predict	3.5%
make	3.2%
understand	3.1%
do	2.9%

Stephen Wolfram, 2023

Chat GPT-3 • Mostly text

OpenAI

Chat GPT-4 • Performance • Multimodal • Web browsing, Plugins

ChatGPT 4

You: What is dynamic light scattering and should I use it to measure reflectance spectra? Give a short answer.

ChatGPT: Dynamic Light Scattering (DLS) is a technique used to measure the size of particles in suspension or polymers in solution. It works by analyzing the way light is scattered by particles in the medium. However, DLS is not suitable for measuring reflectance spectra, which requires different techniques like spectrophotometry. Reflectance spectra involve measuring how much light is reflected from a surface or material, which is a different property from particle size distribution that DLS measures.

11:12 AM | Talk: Lukas Wesemann (University of Melbourne) - ...

Lukas Wesemann (Presenting)

Performance of LLM's

SAT United States

Reading & Writing: 93rd perc.

Math: 89th perc.

Uniform Bar Exam

90th perc.

GPT-4 Technical Report, OpenAI, 2023

Abbreviation	Full Exam Name
All	All exam results combined
FoP1	Foundations of Physics 1
FoP2A	Foundations of Physics 2A
TP2	Theoretical Physics 2
MMP	Mathematical Methods in Physics
FoP3A	Foundations of Physics 3A
P&C	Planets and Cosmology
M&OP3	Modern Atomic and Optical Physics 3
TP3	Theoretical Physics 3
ACMP	Advanced Condensed Matter Physics
TA	Theoretical Astrophysics

"Exploring Durham University Physics Exams with Large Language Models", Will Yeaton, Douglas P. Halliday, June 2023

11:15 AM | Talk: Lukas Wesemann (University of Melbourne) - ...

Video call participants:

- Lukas Wesemann
- Marek Łukasik
- Marek Bednarz
- Marta Gierczyńska-K...
- 5 others
- Marek Łukasik

Lukas Wesemann (Presenting)

- Literature Reviews
- Review papers a thing of the past?

You

Explain the concept of tunable optical metasurfaces based on phase change materials, and provide supporting references published after 2021. Make it short and concise

ChatGPT

Use: ScholarAI

Tunable optical metasurfaces based on phase-change materials (PCMs) are an emerging field in photonics, offering dynamic control of optical properties. Here are some recent studies on this topic:

- Combining Thermal Scanning Probes and Phase-Change Materials for Tunable Metasurfaces:** This study by Michel et al. explores the use of heated scanning tips for local switching in phase-change materials, enabling highly-resolved tunable metasurfaces with perfect absorption in the telecommunication range. The time-resolved switching conditions are investigated using multiphysics simulations. <https://doi.org/10.1002/ADOM.202170008>.
- Tunable Quantum Two-Photon Interference with Reconfigurable Metasurfaces Using Phase-Change Materials:** Estakhri and Norris present novel switchable metasurfaces that control nonclassical two-photon quantum interference. These structures operate at room temperature, require no static power consumption, and have high switching speed, demonstrating significant potential for quantum applications. <https://doi.org/10.1364/OE.419692>.
- Wavelength-Tunable Infrared Chiral Metasurfaces with Phase-Change Materials:** This research by Tang et al. demonstrates a wavelength-tunable infrared chiral metasurface integrated with the phase-change material GST-225. The study highlights the potential of these metasurfaces in applications like chiral thermal switching and tunable chiral photonics. <https://doi.org/10.1364/oe.489641>.

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11:19 AM | Talk: Lukas Wesemann (University of Melbourne) - ...

Video call participants:

- Lukas Wesemann
- Marek Łukasik
- Marek Bednarz
- Marta Gierczyńska-K...
- 7 others
- Marek Łukasik

- Literature Reviews
- Review papers a thing of the past?

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ChatGPT
Used ScholarAI

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Speech-to-Text (STT)



- Recording interviews from voice straight to text
- Automated coding transcripts or recordings
- Potential to extend to video analysis

Text-to-Speech (TTS)



- Automated voice interviewing

Lukas Wesemann (Presenting)

Can LLM's reason?

- **Complex, active field of research**
- Type of reasoning
- Reasoning or heuristics?
- Good at common sense reasoning
- Clearly limited in planning tasks, symbolic and arithmetic reasoning
- Chain-of-thought prompting

Towards Reasoning in Large Language Models: A Survey
Jie Huang Kevin Chen-Chuan Chang
Department of Computer Science, University of Illinois at Urbana-Champaign
CUI@uiuc.edu, kechung@uiuc.edu

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11:28 AM | Talk: Lukas Wesemann (University of Melbourne) - ...

Lukas Wesemann (Presenting)

AI in higher education

Reducing load on educators → Generate curricula and content

Personalized Learning → e.g. Khan Academy

Equalising education → Affordability, Inclusivity, Accessibility

Student supervision

Bias in, Bias out

Access inequality

Impact on Writing and Critical Thinking skill development

Outdated assessment models

11:31 AM | Talk: Lukas Wesemann (University of Melbourne) - ...

Lukas Wesemann (Presenting)

Натисніть **Esc**, щоб вийти з повноекранного режиму

How do universities react?

“75% of students indicate that they will continue to use GenAI even if their professors or institutions ban the technology” Sep 2023, TytonPartners

Reaction	Examples	Date
Banning GenAI	Ban for all students and Faculty e.g. SciencePo, Paris	January 2023
Careful usage	Most Universities	December 2023
Strongly embracing GenAI	University of Hong Kong	August 2023

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11:32 AM | Talk: Lukas Wesemann (University of Melbourne) - ...

Lukas Wesemann (Presenting)

Натисніть **Esc**, щоб вийти з повноекранного режиму

European Union's Artificial Intelligence Act

- Risk based tier system
- Mandate to promote AI literacy
- Emotion detection in educational institutions (*banned*)
- AI systems for marking and access relevant decisions (*high-risk*)
- Most aspects likely to take effect only in 2025

“Deployment of AI systems in education is important in order to help modernise entire education systems[...]”, EU AI Act 2023

Risk Level	Examples
Minimal risk	Video games, spam filters
Limited risk	Chatbots
High risk	Use in transport, for marking exams, recruitment, granting of loans
Unacceptable risk	Social scoring, facial recognition

European Council of the European Union

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11:33 AM | Talk: Lukas Wesemann (University of Melbourne) - ...

Lukas Wesemann (Presenting)

Research: Ideation alongside AI

- Generating new hypotheses
- LLM's only one puzzle piece

nature
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nature > frontier articles > article
Review | Published: 02 August 2023
Scientific discovery in the age of artificial intelligence

nature
Explore content ▾ About the journal ▾ Publish with us ▾

nature > letters > article
Letter | Published: 03 July 2019
Unsupervised word embeddings capture latent knowledge from materials science literature

A-Lab - Lawrence Berkeley National Laboratory

11:36 AM | Talk: Lukas Wesemann (University of Melbourne) - ...

Video conference participants:

- Lukas Wesemann
- Marek Łukasik
- Marek Bednarz
- Marta Gierczyńska-K...
- 6 others
- Marek Łukasik

Lukas Wesemann (Presenting)

Research: AI assisted Preparation

- AI ASSISTED LITERATURE REVIEWS
- AI ASSISTANT COMPLIANCE
- AI TO FIND COLLABORATORS
- GRANT APPLICATIONS

nature
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nature > career column > article
CAREER COLUMN | 13 October 2023
ChatGPT use shows that the grant-application system is broken
The fact that artificial intelligence can do much of the work makes a mockery of the process. It's time to make it easier for scientists to ask for research funding.

**Australian Government
Australian Research Council**

Policy on Use of Generative Artificial Intelligence in the ARC's grants programs

11:36 AM | Talk: Lukas Wesemann (University of Melbourne) - ...

Video conference participants:

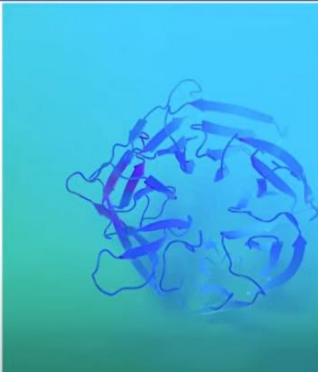
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DR LUKAS WESEMANN: "The promise and perils of AI in academia"

Натисніть Esc, щоб вийти з повноекранного режиму

Research: AI assisted Preparation

- Model and analyse data
- Generate code with AI
- AI decision making support
- AI project management assistant



Google DeepMind, Alpha Fold

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11:39 AM | Talk: Lukas Wesemann (University of Melbourne) - ...

В'ОФІСІ

Participants: Lukas Wesemann, Marek Łukasik, Marek Bednarz, Marta Gierczyńska-K..., 6 others, Marek Łukasik

Lukas Wesemann (Presenting)


what can we do together

Need research collaboration ideas?
Let AI do the brainstorming.

Find Researcher on Scholar Find Researcher on Scholar

BY AWESOME IDEAS GENERATED ALREADY

screen - for science by
Philip Howarth Lukas Wesemann



Phillip Hausler Canva
Lukas Wesemann TMOS, UoM


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11:40 AM | Talk: Lukas Wesemann (University of Melbourne) - ...

Participants: Lukas Wesemann, Marek Łukasik, Marek Bednarz, Marta Gierczyńska-K..., 6 others, Marek Łukasik


Lukas Wesemann (Presenting)

If you're interested in the topic




The AI Academic
Weekly Newsletter on AI for Academics
theaiacademic.com

SCAN ME



Kiall Hildred



Lukas Wesemann

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11:41 AM | Talk: Lukas Wesemann (University of Melbourne) - ...

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Participants: Lukas Wesemann, Marek Łukasik, Marek Bednarz, Marta Gierczyńska-K..., 9 others, Marek Łukasik