

Morgan A. Gray – Curriculum Vitae [01/2024]

Education

PhD, Intelligent Systems (In Progress)

University of Pittsburgh, Intelligent Systems Program, Pittsburgh, PA

Research: Interpretable machine learning and natural language processing in the legal domain.

Computational Skills: **Python**: scikit-learn, NLTK, Huggingface, Keras, PyTorch, NumPy, Pandas, OpenAI; **R**: Caret, Stats, ggplot2, tidyverse, formula interface; **Stata**; **MATLAB**

Coursework: Machine Learning, Artificial Intelligence, Natural Language Processing, Legal Text Analytics, Bayesian Statistics, Applied Statistics, Neural Networks, Human Computer Interaction.

Juris Doctor, May 2019

Duquesne University School of Law, Pittsburgh, PA

Bachelor of Arts, May 2016

Thiel College, Greenville, PA

Summa Cum Laude

Majors: Political Science, Criminal Justice

Teaching

Duquesne University, Thomas R. Kline School of Law
Adjunct Professor of Law

since Apr. 2022

Teaching *Coding for Lawyers* an introductory class on the Python programming language designed specifically for lawyers with little-to-no knowledge of programming.

Experience

Learning Research and Development Center
Graduate Student Researcher

since Sep. 2021

Researching Natural Language Processing, Machine Learning, and Empirical Legal Analysis and how these areas of artificial intelligence can be used to assist lawyers, judges, and law enforcement with decision making, training, and analysis of legal problems.

The Honorable Patricia A. McCullough
Law Clerk

Aug. 2019 – Sep. 2021

Drafted published and unpublished opinions for three judge panels and the Court *en banc*, analyzed cases and recommended dispositions, while maintaining a full case load, and advising Judge McCullough on legal issues.

The Honorable David S. Cercone
Volunteer Law Clerk

Jan. 2019 – June 2019

Drafted opinions relating to civil and criminal issues, researched and advised judge on numerous issues arising under federal law. Assisted with court mandated mediation.

Publications

Katherine L.W. Norton, Morgan A. Gray, Wesley M. Oliver, *The Automated Legal Clinic: Family Law Division, Appellate Section*, Journal of Law and Technology at Texas, *Forthcoming 2024*

Morgan A. Gray, Jaromir Savelka, Wesley M. Oliver, Kevin Ashley, *Can GPT Reduce the Burden of Annotation?* Legal Knowledge and Information Systems (JURIX 2023), 157-166 (2023).

Morgan A. Gray, Jaromir Savelka, Wesley M. Oliver, Kevin Ashley, *Empirical Legal Analysis Simplified: Reducing Complexity through Automatic Identification and Evaluation of Legally Relevant Factors*, Philosophical Transactions of the Royal Society A, *Forthcoming 2024*.

Morgan A. Gray, Kyle R. Buettner, Wesley M. Oliver, Malihe Alikhani, *An Accessible and Interpretable Framework for Recognizing Legal Textual Entailment*. *Forthcoming 2024*.

Wesley M. Oliver, Morgan A. Gray, Jaromir Savelka, Kevin Ashley, *Can AI Reduce Illegal Drug Stops?*, Law Review Article, 91 U. Cin. L. Rev. 2023.

Morgan A. Gray, Jaromir Savelka, Wesley M. Oliver, Kevin Ashley, *Automatic Identification and Empirical Analysis of Legally Relevant Factors*. Proceedings of the Nineteenth International Conference of Artificial Intelligence and Law (ICAIL 2023), 101-120 (2023).

Jaromir Savelka, Kevin D. Ashley, Morgan A. Gray, Hannes Westermann, and Huihui Xu, *Can GPT-4 Support Analysis of Textual Data in Tasks Requiring Highly Specialized Domain Expertise?* Proceedings of the Sixth Workshop on Automated Semantic Analysis of Information in Legal Text (ASAIL 2023).

Jaromir Savelka, Kevin D. Ashley, Morgan A. Gray, Hannes Westermann, and Huihui Xu, *Explaining Legal Concepts with Augmented Large Language Models (GPT-4)*. Proceedings of the Workshop on AI for Legislation (AI4Legs 2023).

Morgan A. Gray, Jaromir Savelka, Wesley M. Oliver, Kevin Ashley, *Toward Automatically Identifying Legally Relevant Factors*. 362 Legal Knowledge and Information Systems, 53-62 (2022).

Morgan A. Gray, Wesley M. Oliver & Arthur Crivella, *Identifying the Factors of Suspicion*, 334 Legal Knowledge and Information Systems (JURIX 2020), 227–230 (2020).

Arthur Crivella, Wesley M. Oliver & Morgan A. Gray, *Reducing Subjectivity and Bias in an Officer's Analysis of Suspicion in Drug Interdiction Stops*, Proceedings of the Seventeenth International Conference on Artificial Intelligence and Law (ICAIL 2019), 254–255 (2019).

Arthur Crivella, Wesley M. Oliver & Morgan A. Gray, *Coding Suspicion*, 313 Legal Knowledge and Information Systems (JURIX 2018), 190–194 (2018).

Presentations

The 36th International conference on Legal Knowledge and Information Systems, Maastricht University, Maastricht, Netherlands (December 2023)

Presented novel research demonstrating that GPT has near human capability in identifying legally relevant facts.

Ethics of the Electronic: How to Understand the Behavior of Generative AI Through Rigorous Evaluation (November 2023)

This presentation was made accompanying a poster highlighting qualitative and quantitative ways of understanding the output of generative models. We focus on the lexical features and domain knowledge that impacts evaluation.

Reshape not Replace, GPT's Usefulness as a Learning Tool (November 2023)

This presentation was made accompanying a poster discussing the use of Generative AI, specifically, the code generating capability of GPT-4 and GPT-3.5, and how to use this capability to support student's learning and understanding of how programs in Python work.

Teaching Reading and Summarizing via Argument-focused Text Annotation (November 2023)

This presentation was made accompanying a poster where we explore whether Reading *and annotating* legal opinions, rather than only reading them, will improve students' understanding of factor-based legal frameworks.

Artificial Intelligence and the Future of Lawyering (August 2023)

Co-lecturing a Continuing Legal Education seminar on the ethical use of artificial intelligence in the legal domain, with particular focus on generative AI models (GPT, Bard, etc).

The 19th International Conference on Artificial Intelligence and Law, Braga, Portugal (June 2023)

Discussed novel research describing how advanced methods can be used to automatically extract text from legal opinions and how interpretable machine learning models can be used to understand predictions of case outcomes.

Talking Legal Ed (Podcast), Linda Jellum, Billie Jo Kaufman, David T. Ritchie (April 2023)

Episode 14 "Writing code with law students". Discussed the impetus and first offering of *Coding for Lawyers*.

Law in The Family (Podcast), Pennsylvania Bar Association (December 2022)

Episode 22 "Technology and Pro Bono Appeals: An Allegheny Co. Pilot Program Aims to Bring Greater Access to Pro Se Custody Appeals." Discussed how simple expert systems can be used to help lawyers work more efficiently.

The 35th International conference on Legal Knowledge and Information Systems, Saarland University, Saarbrücken, Germany (December 2022)

Presented novel research showing promising evidence that the automatic identification of legally relevant facts, from case law, is feasible.

Yale School of Law, Information Society Project (October 2021)

Discussed state-of-the-art research in machine learning and law, addressing bias in AI.

The 33rd International conference on Legal Knowledge and Information Systems, Czech Technical University, Prague (December 2020)

Presented, *Identifying the Factors of Suspicion*, which outlines the feasibility of using basic machine learning to automatically identify legally relevant factors.

The 17th International Conference on Artificial Intelligence and Law, Montreal, Canada (June 2019)

Demonstrated the prototype of a system to predict reasonable suspicion at an academic conference and workshop focusing on artificial intelligence applications within the legal field.

Ethical Questions in the Predictive Determination of Probable Cause (April 2019)

Co-lectured a Continuing Legal Education seminar on the ethics of artificial intelligence and law.

The 31st International conference on Legal Knowledge and Information Systems, Groningen, the Netherlands (December 12 – 14, 2018)

Presented a co-authored paper, *Coding Suspicion*, describing a prototype system that assesses if a police officer has reasonable suspicion to detain a motorist for drug trafficking.

Grants

American Bar Endowment Opportunity Grant entitled “Using Technology to Enhance Access to Custody Appeals” (\$25,000) 2022-2023. With Wesley Oliver and Katherine Norton. This grant resulted in the creation of two expert systems that assist the Family Law Clinic with automatically determining financial ability and appealable issues surrounding custody appeals.

Honors and Awards

Duquesne University Creative Teaching Award

This is a university-wide award, conferred by the Center for Teaching Excellence, and is given to faculty members who have implemented innovative ways of teaching and how these methods positively impact student learning.

Faculty Scholar, Carl G. Grefenstette Center for Ethics in Science, Technology, and Law

This program provides support to faculty members at Duquesne University to support research in ethics for science, law, and technology.

Bar Admissions & Professional Memberships

Commonwealth of Pennsylvania

Western District of Pennsylvania

Society of Catholic Scientists, Member

Volunteer & Activities

Learning Research and Development Center, Graduate Student Council