

Charlie Koutcheme
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Artistic and research interests

I am a doctoral student at the School of Science. I am working on an interdisciplinary project combining knowledge in computing education and recent advances in natural language modelling. In a nutshell, I study how we can better support students learning how to program. My research aims to discover the relationships between programming assignments, students' approaches to solving the related problems, and the technical challenges they face in coming up with successful solutions. My work also investigates how we can use natural language modelling methods applied to source code to provide automatic feedback.

Employment

Doctoral Researcher

Doctoral Researcher
Department of Computer Science
Aalto University
Finland
1 Oct 2021 → present

Doctoral Student , School common, SCI

Aalto University
2 Feb 2022 → present

Research outputs

Evaluating Language Models for Generating and Judging Programming Feedback

Koutcheme, C., Dainese, N., Sarsa, S., Hellas, A., Leinonen, J., Ashraf, S. & Denny, P., 18 Feb 2025, *SIGCSE TS 2025 - Proceedings of the 56th ACM Technical Symposium on Computer Science Education*. ACM, Vol. 1. p. 624-630 7 p.

Propagating Large Language Models Programming Feedback

Koutcheme, C. & Hellas, A., 9 Jul 2024, *L@S 2024 - Proceedings of the 11th ACM Conference on Learning @ Scale*. ACM, p. 366-370 5 p.

Open Source Language Models Can Provide Feedback : Evaluating LLMs' Ability to Help Students Using GPT-4-As-A-Judge

Koutcheme, C., Dainese, N., Sarsa, S., Hellas, A., Leinonen, J. & Denny, P., 3 Jul 2024, *ITiCSE 2024 - Proceedings of the 2024 Conference Innovation and Technology in Computer Science Education*. ACM, p. 52-58 7 p.

Using Program Repair as a Proxy for Language Models' Feedback Ability in Programming Education

Koutcheme, C., Dainese, N. & Hellas, A., Jun 2024, *Proceedings of the 19th Workshop on Innovative Use of NLP for Building Educational Applications (BEA 2024)*. Kochmar, E., Bexte, M., Burstein, J., Horbach, A., Laarmann-Quante, R., Tack, A., Yaneva, V. & Yuang, Z. (eds.). Association for Computational Linguistics, p. 165-181

Let's Ask AI About Their Programs : Exploring ChatGPT's Answers To Program Comprehension Questions

Lehtinen, T., Koutcheme, C. & Hellas, A., 24 May 2024, *Proceedings of the 46th International Conference on Software Engineering: Software Engineering Education and Training*. ACM, p. 221-232 12 p.

Evaluating Distance Measures for Program Repair

Koutcheme, C., Sarsa, S., Leinonen, J., Haaranen, L. & Hellas, A., 10 Sept 2023, *ICER '23: Proceedings of the 2023 ACM Conference on International Computing Education Research - Volume 1*. ACM, p. 495-507

Exploring the Responses of Large Language Models to Beginner Programmers' Help Requests

Hellas, A., Leinonen, J., Sarsa, S., Koutcheme, C., Kujanpää, L. & Sorva, J., 10 Sept 2023, *ICER '23: Proceedings of the 2023 ACM Conference on International Computing Education Research - Volume 1*. ACM, p. 93–105

Automated Program Repair Using Generative Models for Code Infilling

Koutcheme, C., Sarsa, S., Leinonen, J., Hellas, A. & Denny, P., 2023, *Artificial Intelligence in Education : 24th International Conference, AIED 2023, Tokyo, Japan, July 3–7, 2023, Proceedings*. Wang, N., Rebolledo-Mendez, G., Matsuda, N., Santos, O. C. & Dimitrova, V. (eds.). Springer, p. 798–803 (Lecture Notes in Computer Science ; vol. 13916).

Training Language Models for Programming Feedback Using Automated Repair Tools

Koutcheme, C., 2023, *Artificial Intelligence in Education: 24th International Conference, AIED 2023, Tokyo, Japan, July 3–7, 2023, Proceedings*. Wang, N., Rebolledo-Mendez, G., Matsuda, N., Santos, O. C. & Dimitrova, V. (eds.). Springer, p. 830–835 (Lecture Notes in Computer Science; vol. 13916).

Towards Open Natural Language Feedback Generation for Novice Programmers using Large Language Models

Koutcheme, C., 17 Nov 2022. 2 p.

Exploring How Students Solve Open-ended Assignments: A Study of SQL Injection Attempts in a Cybersecurity Course

Koutcheme, C., Tilantera, A., Peltonen, A., Hellas, A. & Haaranen, L., 7 Jul 2022, *ITiCSE 2022 - Proceedings of the 27th ACM Conference on Innovation and Technology in Computer Science Education*. ACM, p. 75-81 7 p. (Annual Conference on Innovation and Technology in Computer Science Education, ITiCSE; vol. 1).

Methodological Considerations for Predicting At-risk Students

Koutcheme, C., Sarsa, S., Hellas, A., Haaranen, L. & Leinonen, J., 14 Feb 2022, *ACE '22: Australasian Computing Education Conference*. ACM, p. 105-113 9 p.

Speeding Up Automated Assessment of Programming Exercises

Sarsa, S., Leinonen, J., Koutcheme, C. & Hellas, A., 2022, *Proceedings of the 2022 Conference on United Kingdom & Ireland Computing Education Research*. ACM, p. 1-7 7 p. 3

Analyzing Fine-Grained Material Usage Behavior

Koutcheme, C., Leinonen, J., Sorva, J. & Hellas, A., 15 Mar 2021, *Seventh SPLICE Workshop at SIGCSE 2021 "CS Education Infrastructure for All III: From Ideas to Practice"*. 3 p.