

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 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**

Koutchene, 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., Koutchene, 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**

Koutchene, 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.