Introducing myself and the module

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My studies

- Grew up in Germany.
- I studied Computer Science (5 years), Mathematics (5 years) and Economics (2 years, no degree) at the FernUniversität Hagen (long distance learning university).
- I also studied Physics (4 years, no degree) at the University of Freiburg.
- In 2008, I moved to Cambridge for a PhD in Computer Science.
- Which I got in 2021 with a dissertation on “Computable Metamathematics and its application to Game Theory”.

My career

- Held a research fellowship in Cambridge 2012-2015, working mostly in mathematics.
- Moved to Brussels as a postdoc, working on game theory for automated verification and program synthesis.
- In 2017, I was appointed as a lecturer here in Swansea.
- A central theme of my research is how algorithmic thinking can lead to progress in pure mathematics.

How this module works - what's happening

- Three lecture slots per week. Some of these will be for practising/revision (announced clearly in advance).
- Passive attendance will not be enough. You need to engage with the material!
- Do the quizzes, read some literature, discuss with your fellow students (and us). Think about stuff!

Assessment

- Frequent Canvas quizzes are worth 15% in total. A mark is 1%. You can redo quizzes.
- There is a coursework worth 20%. It will be handed out by February 22nd, and due March 22nd.
- Finally, an exam worth 65%.

Aims of the module

- Being able to think like a theoretical computer scientist will be very useful for you. Keep an open mind!
- Familiarity with the concepts taught in this module will occasionally come in handy.
- Being able to do the exercises is a side effect and a means to an end.

Core topics

1. Formal grammars
2. Finite automata
3. Computability and Turing machines