

The Research Group

Artificial Intelligence Lab

has the honor to invite you to the public defense of the PhD thesis of

Katie Mudd

to obtain the degree of Doctor of Sciences

Title of the PhD thesis:
How social structure affects the persistence and features of shared sign languages

Promotor:

Prof. dr. Bart De Boer (VUB)

The defense will take place on
Tuesday, March 8, 2022 at 16h00 in auditorium D.2.01

Due to COVID-19 measures, the capacity to physically assist the event at the Campus of Humanities, Sciences and Engineering of the Vrije Universiteit Brussel, Pleinlaan 2, 1050 Elsene will be limited. The defense can also be followed through a live stream. Contact katie.mudd@ai.vub.ac.be for more information.

Members of the jury

Prof. dr. Katrien Beuls (VUB, chair)
Prof. dr. Beat Signer (VUB, secretary)
Prof. dr. Esli Struys (VUB)
Prof. dr. Marieke Schouwstra (University of Amsterdam)
Prof. dr. Sean Roberts (University of Cardiff)

Curriculum vitae

Katie did an Interdepartmental Bachelor in Humanities and Social sciences, focusing on linguistics and psychology, at University College Utrecht in the Netherlands. This is when I became interested in sign languages, having taken a course on Irish Sign Language and sign language linguistics.

After this I completed an MSc called the Evolution of Language and Cognition at the University of Edinburgh, where I was introduced to agent-based modeling.

I started my PhD in 2017 at the Vrije Universiteit Brussel under the supervision of Bart de Boer (promotor) and Connie de Vos (co-supervisor) with the goal of studying the sign language Kata Kolok using computational techniques.

Abstract of the PhD research

This thesis argues that it is necessary to consider the social structure underlying communities when studying the languages they use. Studying sign languages provide the only way of studying the emergence of a real language, as all sign languages existing today are young languages. In addition, sign languages have emerged in communities with varied social structures, such as in communities with different population sizes and different degrees of shared social and psychological information. This thesis studies how the social structure of a community influences two factors: sign language persistence (i.e. if a language continues to exist or not) and the degree of lexical variation. To do so, I use two main methodologies: first, I use agent-based models, in which autonomous agents in a population interact, and some outcome is measured globally. Second, I use a picture description task with Kata Kolok signers and analyze their responses.

I show that the persistence of this type of sign language is facilitated by a variety of cultural factors: certain marriage patterns (deaf-deaf marriages, consanguineous marriages) and sign language transmission throughout the entire family including hearing signers. By incorporating data from existing signing communities it is possible to better understand the set of cultural and genetic factors which allow for their persistence.

Using a variety of statistical techniques, I show that deaf and hearing Kata Kolok signers have different lexical preferences and in I show that women and men have different degrees of lexical variability, perhaps resulting from their different social network structures. In these chapters, I developed ways to study lexical variation in a community with a high degree of lexical variation, identifying appropriate statistical techniques which can be used.

The final study of the thesis is a computational investigation asking what is the role of shared context on lexical variability. I used an agent-based model to formalize a theory which states that a high degree of shared context allows for the successful use of iconic mappings and thus the retention of the lexical variability present in language emergence. I found that a high degree of lexical variability is affected not only by a high degree of shared context, but also by a large population size. Overall, this thesis has studied language emergence and sign languages using computational and statistical techniques. It contributes to a growing body of literature demonstrating the relationship between social structure and linguistic structure.