Thesis Supervisors:
Linguistics and Cognitive Science

Note: You are free to choose supervisors across the disciplines. If you desire a supervisor across disciplines please contact the desired supervisor in advance.

All supervisors external to LICS must be approved by the Head of Department, Joshua Charles Skewes.

NB: Faculty members on this list are available for thesis supervision, and most are also available for **internal supervision of Project Placement projects.**

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Research areas/Areas of supervision

- Linguistic behavior on social media
- Translation theory and practice (also as product thesis)
- Translation critique
- Text linguistics, discourse analysis, ethnographic linguistics
- Language and evolution
- Psycholinguistics
- Romance and Germanic languages (also in a comparative perspective)
- Grammar studies (e.g. standard vs. non-standard varieties; historical change)

Examples of theses

- Rhetorical moves and linguistic characteristics in private hate messages
- Developing a framework for quantifying success on social media (focused on misinformation; Cog.Sem.)
- The conversational characteristis of online-meetings
- Vaccination discourse on Israeli Facebook
- The discourse of depression on Greek Reddit
- Hadetale i danske online-medier
- Anti-vaccinationsdiskursen på danske Twitter
- Høflighed på dansk - spørgeskemaundersøgelse

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c8-7eb1-405f-916d-ccc95dec88d8).html

Research areas/Areas of supervision

- Phonetics and Phonology
- Bilingualism
- Second-language acquisition
- First-language acquisition
- Language and pre-literacy intervention
- Language and pre-literacy assessment
- Language acquisition in hearing-impaired

Examples of theses

- Perception ved indlæring af nye ord hos danske hørehæmmede førskolebørn: Diskrimination af initiale konsonanter
- Forebyggelse af læsevanskeligheder i børnehavealderen - Evidensbaseret prædiktion og intervention
- En undersøgelse af om Reciprocal Teaching kan forbedre sprogforståelsen i læsning hos tosrpogede elever i de yngre klasser i folkeskolen
- Otitis media og sprogudvikling – En kvantitativ undersøgelse af sprogudviklingen hos danske børn i treårsalderen med historik for otitis media
- The Phonological Development in Danish-speaking Children
- Voksne hørehæmmedes identifikation af danske konsonanter i stilhed og støj
- Er piger bare dygtigere? En undersøgelse af kønsforskelle i sproglige kompetencer hos treårige baseret på national sprogvurdering

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Research areas/Areas of supervision

Language processing:

- Phonetics/phonology
- Foreign language learning
- Arabic phonology/morphosyntax
- Danish phonology/morphosyntax

Parkinson's disease:

- Deep brain stimulation (DBS)
- Basal ganglia
- Response inhibition
- Verbal fluency

MEG/EEG:

- Auditory processing
- M/EEG methods generally speaking
- Experimental design for neuroimaging

More tangentially related topics:

- Musical processing in cochlear implant users
- Musical feature processing in the brain
- Multimodal (e.g. audio-visual) sensory processing

Examples of theses

- Exploring the Applicability of the MiniPSG: RSWA Quantification, Diagnostic Performance and Data Quality
- Looking from metacognition – Towards a technological facilitation of metacognition
- Har chunk-sensitivitet en effekt på læsehastighed?
- Structural priming from arithmetic to language
- Investigating the application of 3D CNNs to whole-brain fNIRS data and transfer learning
- Inconsistencies detected in the processing of human emotional and non-emotional auditory and visual stimuli; an fNIRS study
- Exploring fNIRS and verbal reporting as complementary methods for neuroanthropology research
- Selective action verb impairment in Parkinson's disease patients when reading naturalistic stories
- Impaired action language processing in Parkinson's disease when reading naturalistic texts
- Developing Eye-Cue: Implementing augmented reality cues to relieve freezing of gait in Parkinson's dis- ease - A case study

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Research areas/Areas of supervision

I am interested in the below research topics at the levels of brain & behaviour:

1) Interpersonal synchrony:

How do humans synchronize rhythmic actions such as music with one another?

2) Perception & production of auditory rhythms:

How do humans perceive and produce auditory rhythms?

3) Turn-taking in human communication:

How do humans take turns across different foms of communication (e.g., musical interaction, conversation)?

Methods used:

- Neural: Electroencephalography (EEG)
- Behavioural: MIDI, capacitive sensors, Bela (https://bela.io/)
- Coding: MATLAB/C-shell/C++ (basic)

Examples of theses

- Neural and behavioural correlates of musicians' natural frequencies in music (McGill University)
- Endogenous rhythms influence interpersonal synchrony (McGill University)
- Match me if you can: Continuous dynamics of learning to coordinate auditory-motor rhythms with a partner (Central European University)
- Neural entrainment as a mechanism of rhythm processing in music and language (Aarhus University)

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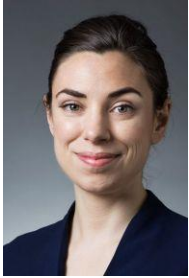https://chrismathys.com

Research areas/Areas of supervision

- Computational neuroscience
- Predictive coding
- Data science
- Disorders of the mind

Examples of theses

- The diagnostic predictiveness of interindividual differences in susceptibility to illusory control
- Inside the triad - a computational exploration
- The role of dopamine in a volatile social decision-making task with active inference and a hierarchical Gaussian filter

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Research areas/Areas of supervision

Mental health and psychological well-being

Depression, anxiety, mental health around childbirth

Treatments for mental health

Measuring mechanisms of change

Treatment engagement

Sleep and emotion

How does sleep impact next day emotion functioning

Sleep in new parents

Parents and parent-child interactions

How do parents share caregiving?

Examples of theses

- Parental strategies at night for optimizing own sleep

- Systematic review of mediators in cognitive behavior therapy for social anxiety disorders

- Gender Difference in behavioural response to infant crying

- Pet ownership and mental health during the COVID-19 pandemic

- Are you going to take care of me alone, Dad? Using sentiment analysis to explore how the Danish media portrayed the August 2022 paternity leave implementation

- When Bayes goes Mindful on the app: investigating home practice patterns and adherence in MBSR with smartphone app monitoring

- Sleep in fathers: a systematic review and meta analysis of data from two years post birth of a child

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Research areas/Areas of supervision

- Experimental semiotics
- Social cognition
- Embodied communication
- Joint action
- Action planning and control
- Joint music performance
- Shared representations
- Behavioral synchrony
- Social learning

Examples of theses

- Dissociating Movement Variability and Speed in Intentional Joint Action Coordination
- Motor Coordination and Task Representations in Joint Action
- Learning Time Coordination in Joint Action and the Effects of Theory of Mind Ability
- Do You Want to Play Piano with Me? A Study on Shared Learning in Music Performance
- Transfer of Learning in Joint Action

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Research areas/Areas of supervision

- Early language development Early childhood interventions
- Quality of the learning environment (daycare/home)
- Early assessment (language, pre-literacy, math, socioemotional skills)
- Professional development (teachers)

Examples of theses

- Kvaliteten af børns ordforråd som indikator for senere skoleudvikling
- Fra afprøvning til test. En undersøgelse af otteårige med og uden SLI's færdigheder i præteritumbøjning omsat til praksis
- Børns tilegnelse af tidlig gestik
- Ensartetheden i den danske logopædiske testning med Reynell og Sproglig test 1

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Research areas/Areas of supervision

Clinical Linguistics:

- Dyslexia
- Reading Comprehension
- Autism Spectrum Disorder
- Working Memory and Language Disorders

Child language development:

- Phonological development
- Child-directed speech
- Language development in school-age children

Speech Acoustics:

- Voice quality
- Speech processing
- Modelling prosody in clinical groups

Methods:

- Quantitative Analysis
- Online Experiments
- Acoustic Analysis
- Meta-Analysis
- Network Analysis
- Experimental Methods

Examples of theses

- Kan skærmlæsning optimeres? En undersøgelse af læseoptimerende tiltag og bevidsthedsskabende læsestrategier
- Arbejdshukommelsen og skriftsprogsvanskeligheder - Et foreløbigt studie af arbejdshukommelsen hos personer med dysleksi og dyskalkuli
- "Jeg snakker hele tiden, far - jeg holder slet ikke pause". En interventionsundersøgelse af et video-SMS-forløb til forældre med børn i vuggestuealderen.
- Vanskeligheder med lokal kohæsion hos studerende med skriftsprogsvanskeligheder
- RAIOO: Redskab til automatisk individuel opsætning af et ordforslagsprogram
- Los, las... ¿y les? Assessing the cognitive effort of gender-neutral language in Spanish role names
- Investigating the role of mouthing in Greek Sign Language, and its relationship with lexical access for congenitally deaf and bimodal adults: An online priming study
- Syntaktisk kompleksitet, arbejdshukommelse og dysleksi i videregående uddannelse
- Authorship Analysis: Document Clustering for Digital Text Forensics
- Does musical training affect the speech perception abilities of cochlear implant users?
- Udvikling Af Stavekompetencer - en pilotundersøgelse af dysleksimaterialers effekt i den almene undervisning
- Udvælgende opmærksomhed og kognitiv kontrol hos dyslektiske folkeskolebørn - et kvantitativt studie af ordblindes opgaveløsning, selvregulering og arbejdshukommelsesstrategier
- Læseforståelse og dysleksi på lange videregående uddannelser: En undersøgelse af clozetest-formatet og dets gyldighed som læseforståelsestest på en kontrolgruppe af universitetsstuderende.
- Dyslexia - using spelling errors to qualify self-reports

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Research areas/Areas of supervision

Child language development:

- Phonological and lexical development

- Statistical learning of language

- Online sentence processing (*intermodal preferential looking*)

- SES-related predictors of language development

- Parent-child interactions, child-directed speech

Language processing:

- Artificial language learning paradigms

- Role of phonetics on language processing

- Phonetic reduction in Danish and psycholinguistic implications

Eye tracking:

- Application of eye tracking to topics in cognitive science/linguistics at large

Examples of theses

- Look at me, I'm talking to you: Using eye tracking to investigate meaning extraction in communication

- When fish sell clerks: Linguistic processing in clear and noisy conditions

- The eyes hold important cues to human mate choice

- What makes an art expert? Investigating the effect of briefing on the perception and evaluation of modern art

- Aesthetic perception and evaluation

- Effects of commercials on consumer behavior: An eye-tracking study

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Research areas/Areas of supervision

- Interaction
- Conversation analysis
- The grammar of talk-in-interaction
- Ethnographically based studies of language use and interaction
- Video-observation
- Danish grammar
- Danish phonetics and phonology
- Interactional linguistics, emergent grammar, construction grammar, dialogic grammar
- Second language acquisition
- Children's interaction
- Critical discourse analysis
- Bilingual, multilingual, plurilingual interaction
- Qualitative sociolinguistics
- Post-structuralist linguistics

Examples of theses

- A conversation analytiic investigation of the use of the Danish modal particles 'godt' and 'gerne' in naturally occurring Danish conversations
- Samtaleri: Et dialogbaseret læringsmateriale til undervisning i dansk som andetsprog
- At springe ud af skabet – en lingvistisk-etnografisk, queerteoretisk undersøgelse af homo- og heteroseksuel identitetsarbejde
- Samarbejdende børn – En lingvistisk etnografisk konservationsanalytisk undersøgelse af sprog og bevægelser i børnehavebørns sociale interaktioner
- Samtalegrammatik i skriftlig online interaktion – en digital-samtaleanalytisk undersøgelse af udvalgte samtalegrammatiske fænomener på facebook
- Æv bæv – Et samtaleanalytisk indblik i vurderinger i danske, naturlige samtaler
- Investigating interlanguage and cross-linguistic influence in the foreign language classroom
- The function of the foundation field in Danish talk-in-interaction. On the intersection of information structure, interactional organization and syntactic coordination
- "Vi er nogle der bruger det!" - Danish gender-inclusive pronouns in theory and practice 1942-2021
- The usage of the Danish "godt" and "gerne" in different sentence contructions are influenced by the context e.g. in a command or a invitation
- Ukrainian speakers learning Danish. Insights from a linguistic ethnographic fieldwork

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Research areas/Areas of supervision

Cumulative cultural evolution, e.g.
- Social learning
- Cultural transmission chains

Social cognition, e.g.
- Social influence
- Metacognition
- Mentalising
- Advice-taking

Group decision-making, e.g.
- Perceptual decision-making
- Collective intelligence
- Group behaviour
- Wisdom of crowds

Individual differences, e.g.
- Structural neuroimaging
- Behaviour/Domain-generality

Experimental Semiotics, e.g.
- Emerging sign-systems
- Conventionality

Art-Science collaboration projects
- I work in the EER project https://eer.info/

Abstraction in human cognition
- I work in the Traincrease project https://traincrease.uw.edu.pl/en/main/

Examples of theses

- The effect of deliberation on metacognitive skills in climate change knowledge: rethinking the wisdom of crowds

- Drawn from memory: Compression in cultural transmission

- Beyond the dyad: Social cognitive mechanisms in larger groups

- Does the Voice Gender Matter for our Decisions?

- Social influence, cognitive processes and how these mechanisms manifest themselves as influencer marketing in the digital world

- Group composition and diversity in collective decision-making: recommendations for applications at the workplace

- The impact of colours on the human mind

- Investigating individual differences between social advice-taking and brain structure using diffusion magnetic resonance imaging

- What makes you smart? Examining the role of gray matter density, iron and myelin on intelligence

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Research areas/Areas of supervision

- Experimental studies of language/symbolic evolution: in particular, it is possible to develop your project as part of my ongoing ERC project eSYMb: https://cc.au.dk/en/esymb

- Joint problem solving

- Dialogue

- Gesture

- Natural Language processing

- Sound symbolism

- Creativity

- Eye-tracking

Examples of theses

- Investigating the cultural transmission of prehistoric symbolic behavior

- What gesture reveals about event conceptualization: An experimental approach to the communication of transitive event structure

- Real-life attitude changes through episodic simulation and the role of emotional arousal

- Expanding Insights From Agent-Based Modelling Through Intelligent Conversational Interfaces

- Assessing Factor Structure and Longitudinal Measurement Invariance of Mindfulness Measures Using Exploratory Structural Equation Modeling

- Browser-based platform with templates used for pedagogical interventions

- Dominance and conversational dynamics in dyads and triads

- Mapping the lexicon for sound in Danish, Norwegian and English

- Informational Synergies in the HCRC map task corpus

- Environmental Constraints on Cultural Conversations

- Coordination in Joint Problem Solving. A multidisciplinary Approach to Reconstructing Communicative Abilities in Our Genus

- The Linguistic Relativity of Synesthetic Pitch Metaphors

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Research areas/Areas of supervision

Consciousness, awareness and attention:

- How to measure subjective experience
- Neural correlates of consciousness

Electro- and magnetoencephalography:

- Somatosensation
- Visual perception
- Sensory expectation
- The cerebellum
- Parkinson's Disease
- On-scalp magnetoencephalography
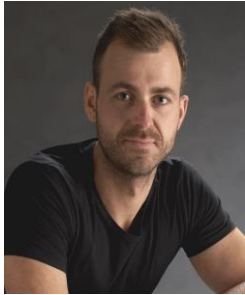- Source reconstruction

Programming pipelines:

- Python
- R
- MATLAB

Related topics:

- Primate cognition
- Mixed models fitting and machine learning
- Philosophy of Mind

Examples of theses

- Hjernens signalstoffer og aktivitet hos personer med muskelkraftnedsættelse, betydning for diagnostik og udvikling af hjælpemidler
- Breathing in the Brain: A computational approach
- Random Matrix theory based denoising of redundant neuroimaging data
- Expectation-related activity in the cerebellum during somatosensory perception
- Selective Auditory Attention and the Influence of Expertise
- Perceptuel bevidsthed i henhold til detektions- samt diskriminationsopgaver
- Cortical alpha waves as a neural correlate of attention

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Research areas/Areas of supervision

Recreational fear:

- Fear & enjoyment
- Horror fan types

Cognitive Development:

- Play & Playfulness
- Cognitive models of play
- Play fightning
- Risky play / adventurous play
- Enjoyment
- Playing with fear / recreational fear / horror media

Cognitive Science of Religion:

- Religious experiences
- Divination
- Agency Detection

Human-Computer Interaction, UX, Design Psychology

- Usability design optimisation

Methods:

- Mobile Eye Tracking
- Heart rate (light, unobstrusive setup, Firstbeat. Bodyguard 2)

Examples of theses

PLAY

- The role of play in divergent thinking
- Exploring the connection between sexual curiosity and play
- Locomotor play / hopscotch motion detection

HCI & UX

- Cookie design
- Boardgame design

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Research areas/Areas of supervision

Quantitative approaches to areas in the vicinity of

Brain and body:

- Cognitive neuroscience
- Basic physiology and cognition (heart rate, respiration, hormones, sleep, etc.)

Language and mind:

- Lateralization in language, brain and behavior
- Language and attention/space
- Language as a window to personality
- The inner voice and self-talk in relation to cognition, mood and personality

Sound and fury:

- Emotion & mood
- Music and sound processing

Sex and gender:

- Sex and gender differences in language, brain and behavior

Examples of theses

- Revisiting the Bayesian Model for Novel Word Learning
- Objects as Signs – an experimental study.
- Does it sound alive? - auditorily perceived cues of animacy
- Dilated Pupils As an Attractor of Visual Attention: an Eye Tracking Study
- Music and meaning- making. The effects of music in cross- modal domains
- Beskrivelse og praktisk afprøvning af forventningsopbygning i musik og hjerne med fokus på ""Mismatch Negativity"" MMN
- When Depression Speaks - A Computational Analysis of Quantitative Differences in Word Frequencies Between Danish Individuals with First-Episode Major Depressive Disorder and Healthy Controls
- What does the inner voice do? Self-regulation in sport and cognitive psychology

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Research areas/Areas of supervision	Examples of theses
• Computational psychiatry	
• Cognitive modelling	
• Reinforcement learning	
• Agent-based modelling	
• Signal processing	
• Software engineering	
• MCMC sampling methods	
Area of interest:	
• Beliefs and delusion	
• Individual and collective memory	
• Brain body interaction	
• Cardiac interoception	
• Decision making	
• Metacognition	

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Research areas/Areas of supervision

- Cognitive Linguistics
- Pragmatics and the philosophy of pragmatics
- Theory of Text Types and Genres
- Communicational strategies at large (ads, brands, framing, and discourse)
- Meaning-making in Art and Perception
- Meaning-making in Art and Language
- Philosophy of Mind, Phenomenology and Semiotics

Examples of theses

- Political Communication - Framing and Conceptual Metaphor
- Synthesizing Ritualized Behavior and Religious Cognition
- Din Hjerne på Reklamer - Hvorfor nogle reklamebilleder er mere fængende end andre?
- Morality as Purity - Studying Moral Cognition from the Perspective of Conceptual Metaphor Theory and Moral Psychology
- Meaning-making in literary art: A cognitive semiotic study on simultaneous narration
- Perception and Representation of Motion, Time, Sound, and Symbols in Comics
- Folket – En undersøgelse af hvordan konceptuelle metaforer strukturerer og framer forestillingen om "folket"
- Fra solorytter til læsehest - En undersøgelse af guidet fælleslæsning som litteraturpædagogisk metode til undervisningen i en 10. Klasse i Århus
- Framing, narratives, and conceptual metaphors as propaganda techniques for psychological and informational warfare
- The Semiotics of Soft Power: An Examination of the South Korean Entertainment Industry
- Kropslige fortællinger: Litterære narrativer som adgang til de handicappedes verden

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Research areas/Areas of supervision

- Sociolinguistics
- Anthropological linguistics
- Historical linguistics
- Contact linguistics
- Pidgins and creoles
- Amerindian languages
- Genderlects
- Twins' languages
- Language planning and policy
- Multilingualism
- Deaf studies
- Canada
- Nuristani languages
- Typology
- Language description

Examples of theses

- Fonologisk kompleksitet i dansk – en diskussion af det danske lydsystems synkrone og diakrone kompleksitet fra et typologisk perspektiv.

- Sproglig socialisering – En lingvistisk etnografisk tilgang til en caseundersøgelse fra en dansk institution med tosprogede børn.

- "Må jeg låne your pencil, please?". The whys and whens of codeswitching in schoolchildren's conversations.

- Rosa Mexicano. The meaning of the Mexiacan Spanish color terms of Oaxaca.

- The spread of English in present Europe: Comparing the popularity of English in different parts of Europe. A survey among volunteers in an international organization.

- African structural continuity in Atlantic creoles: phylogenetic network analysis applied to structural-typological data.

- The performance of femininity in rap lyrics.

- Did the Neanderthals speak? – A review of the evidence.

- Kæltringelatin. Kryptolekter blandt omrejsende underklassegrupper på landet i Skandinaviuen mellem år 1700 og 1945.

- Linguistic Fieldwork: Experience and tense and aspect system description of a Neo-Aramaic dialect of Diana, Iraq.

- Sproglige stereotyper i danske film og en sprogholdningsundersøgelse af danskernes holdning til den multietniske ungdomsstil.

- *The Instruction of Literacy for Adult Newcomers in Highly Literate Societies*

- Lang Belta: the creole of space. A case study of an invented creole.

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Research areas/Areas of supervision

- Semantics and pragmatics
- Language typology and variation
- Natural Language Processing and Machine Learning
- Computational Linguistics
- Social media analysis
- Causality/causal inference modeling
- Sound symbolism
- Social meaning/sociopragmatics

Examples of theses

See student paper titles resulting from courses/seminars I've taught at AU:

- 2019 Research Workshop Computational Linguistics papers: https://aunlp.github.io/LaC20/#!2019_Papers.md
- 2019 Natural Language Processing papers: https://aunlp.github.io/LaC20/NLP_posters_flier.pdf

Some recent theses:

- Improving coreference resolution accuracy on scientific texts using pronoun masking and document segmentation
- Offensive Language Detection in Danish
- Creating NLP tools for analysis of Danish News Data
- Topic Modeling Danish Covid-19 Tweets
- Towards explainable Embeddings: XAI using topic modeling
- EMODa: An Interactive Tool for Emotion Classification in Danish
- How Individual Perceptions & Societal Constructions Affect Compliance During COVID-19: A two-fold Methodological Mixed Effects Approach
- Empathy and Political Polarization in Coverage of the Black Lives Matter Movement: An NLP Approach

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Research areas/Areas of supervision

Social interactions (free and task-oriented):

- Quantitative corpus analysis

- Experimental investigations

- Agent based models

Language, Voice, Gesture and Movement in:

- Autism Spectrum Disorders

- Schizophrenia

- Affective disorders (Depression, Bipolar)

Language acquisition

- Corpus analysis (e.g. Childes)

- Lexical networks

- Child Directed Speech

- Turn-taking

Computational cognitive modeling

- e.g. Models of information integration in social contexts

- e.g. Implementation and validation of cognitive models in a probabilistic framewok (Stan)

Natural Language Processing (e.g. large corpora of transcripts, or social media)

- Speech processing

- Interactive alignment

Examples of theses

List of suggestions for projects within my research interests:
https://docs.google.com/spreadsheets/d/1tlIHV0-W9NBFSba1gUplGQ50lmFQfX8x8l0434xxnAA/edit?usp=sharing

Examples of previous theses:

- Computational models of categorization in individual and dyadic joint decision tasks

- Generalizability of machine-learning based speech markers of neuropsychiatric conditions

- Semantic exploration and exploitation in child-caregiver conversations

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Research areas/Areas of supervision

Natural language processing

- Clinical NLP (e.g., predicting clinical traits from text)
- Linguistic markers of cognitive traits
- Humanitarian NLP
- Human- vs. AI-generated text
- Agent-based simulations with conversational agents

[Computational] social science

- Analysis of social media data
- Agent-based simulation of social behavior
- Text analysis for political science

Neuroimaging and open science

- Naturalistic fMRI
- (Meta)analysis & open data (Neuroscout; Neurosynth)
- Linguistic and auditory representations in the brain

Research methods

- Reproducibility, replicability, and generalization
- Open science practices
- Becnhmarks for cognitive / social sciences

Examples of theses

- Expanding insights from agent-based modeling through intelligent conversational interfaces: a proof-of-concept study in the context of filter bubbles

- Contextually-sensitive topic models: an in-depth investigation and two novel approaches

- Quantifying creativity: classification of human- and machine-generated storytelling

- Representing visual art with embeddings from computer vision models

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Research areas/Areas of supervision

- Laungage description and documentation
- Historical & comparative linguistics
- Grammaticalisation
- Linguistic typology
- Cognitive-functional-semiotic grammar
- Sign languages - deaf & alternate
- Australian Aboriginal languages
- Khoe languages
- History of linguistics
- Possession
- Interpersonal grammar and joint attention
- Nominal and verbal classification
- Kinship
- Semantics and pragmatics
- Narrative
- Spatial language and cognition

Examples of theses

- Reta phonology, morphology and syntax. A grammar sketch of a Papuan language of Nusa Tenggara Timur, Eastern Indonesia
- Blumps and twipitts: how native speakers of English perceive sound and symbolic elements in nonsense words
- An initial description of the phonetics and phonology of Kurdish Sign Language
- The phonology of Zaachila Zapotec. A segmental and suprasegmental analysis
- ORSUMM recognizes speakers using motor movements
- Typological variation of syntactic roles
- Relationen mellem læsning og hurtig automatisk benævnelse