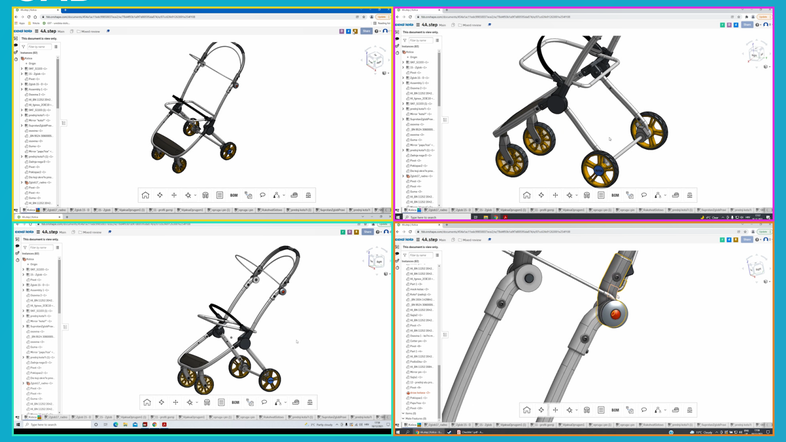
Automated verbal collaboration analysis for distributed design activites

CAD



MOTIVATION

Some studies estimate that there will be an **87% increase in remote workers** between 2020 to 2025.

QUESTIONS

What technologies best support remote design activities? How can we **automate the evaluation of participant interactions** during remote activities?

METHODOLOGY

Based on existing work, **non-contextual verbal communication** was chosen for analysis. Using a **MATLAB program** we can determine and **analyze communicational structures** of remote activities.

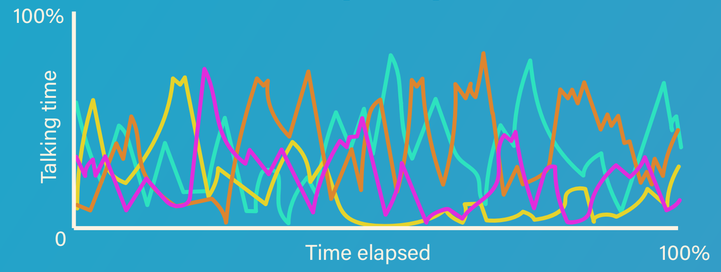
IMPLEMENTATION

The **MATLAB program** uses speech segmentation data and audio recordings to determine **speech dynamics** and **Markov chains** of verbal interactions.

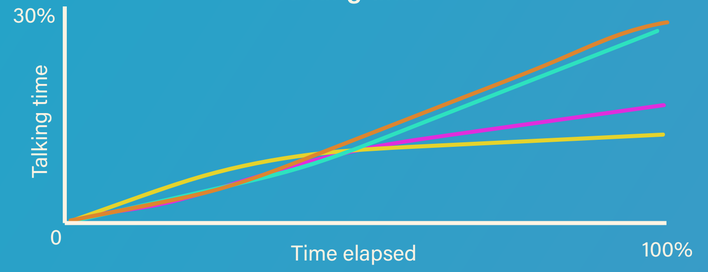
RESULTS

Designers (D1, D2) tend to talk more than the reviewers (R1, R2). Interactions between participants of different types are more common.

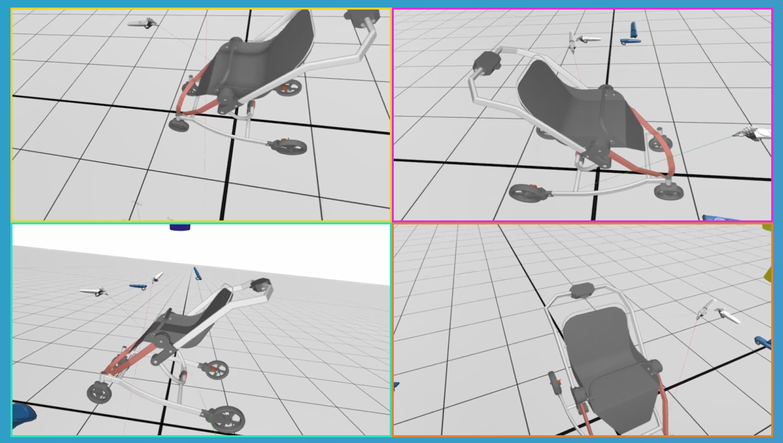
Moving average



Talking time



VR



DISCUSSION

The developed program **automates and quickens the analysis of communicational structures**. With the generated data, we can quickly **compare different scenarios** (e.g. VR vs Onshape).
The results can also help us **recognize formations of sub-teams and dominant members**.

FUTURE WORK

Enabling real-time analysis, expanding the scope of the program to include context, and improving the UX.

RELATED WORKS

COMPARING VIRTUAL REALITY AND DESKTOP INTERFACE FOR REVIEWING 3D CAD MODELS

DESIGN REVIEWS IN IMMERSIVE AND NON-IMMERSIVE COLLABORATIVE VIRTUAL ENVIRONMENTS: COMPARING VERBAL COMMUNICATION STRUCTURES

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FSB onshape