

# Semanux

## We make the Web inclusive

In today's digital society, the Web is everywhere. We use it to inform ourselves, do shopping, be entertained, and get work done. But there are more than 50 million people worldwide who need assistive technology for communication. Only about 2% of them have access to modern assistive technology. Specifically, people with motor impairment caused by an accident, illness, or aging, cannot conveniently use mouse, keyboard, or touch. This excludes many individuals from nowadays essential services and modern working environments, making them second class citizens in the digitized era.



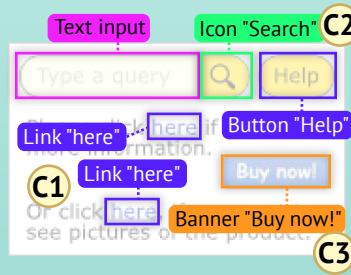
### Idea

In Semanux, we want to make people with motor impairment first class citizens on the Web:

#### 1. The user wants to use an interface of, e.g., an online shop



#### 2. Our AI understands the interface



#### 3. The user interacts hands-free using their voice and eyes



### Challenges

- C1 Find interactive elements on Web interfaces.
- C2 Understand icons without title or accessibility annotations.
- C3 Decode embedded texts reliable and in real-time.
- C4 Adapt the interaction for hands-free input means.



### Approach

We develop an AI that considers hypertext, accessibility annotations, and pixel patterns from the screen – creating an AI to understand all Web interfaces and to adapt for hands-free interaction.



### Market Potential

#### Targeting Consumers

We create a Chrome-based browser that adapts the interaction with Web sites for social media, communication, entertainment, and shopping.

#### Targeting Businesses

We integrate our technology with business software by IBM, SAP, and Microsoft to support or even enable the inclusion of employees.

Market Size: According to the market leader in eye-tracking technology Tobii AB, at least 50 million people worldwide need assistive technology to communicate. But only 1 – 2 percent of the target population are using an assistive system that makes the digital environment accessible to them.\*

\*<https://www.tobii.com/siteassets/tobii-group/investor-relations/roadshow-sep-17-18-2019.pdf>



### Awards

Raphael Menges and Chandan Kumar have developed GazeTheWeb, an award-winning Web browser that is controlled solely via eye gaze. The design, technology, and business potential was decorated at various venues.



Winner of the Web for All Accessibility Challenge



Honourable Mention for Technical Approach



Scored Third for Digital Impact



### Team

#### Raphael Menges

M.Sc. in Computational Visualistics

Machine Learning C++  
Computer Vision



#### Ramin Hedeshy

M.Sc. in Web Science

JavaScript NodeJS Python

#### Chandan Kumar

Doctor rer. nat.

Multi-Modal Interaction Eye Tracking

Submission of the project to EXIST Transfer of Research in January 2021. **Interested in the project? Contact us!**



✉ [contact@semanux.com](mailto:contact@semanux.com)

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Institute for Parallel and Distributed Systems  
University of Stuttgart

Mentors:  
Prof. Dr. Steffen Staab  
Cyber Valley Endowed Chair for Analytic Computing

Prof. Dr. Alexander Brem  
Chair of Entrepreneurship in Technology and Digitization