

Bijlage 3 bij statenmededeling mindlabs: bedrijven, startups en strategische partners

***Projecten die ikv MindLabs op dit moment lopen (zie website:
www.mind-labs.nl)***

VIBE: Virtual Humans in the Brabant Economy

Project PI: Prof. Dr. Max Louwerse

Funding: European Union, OPZuid, Ministry of Economic Affairs, Province of Noord-Brabant, City of Tilburg. Total: 7.000.000 euro

Together with 14 partners, VIBE will develop virtual humans for training purposes in healthcare.

In addition to principal investigator Tilburg University, knowledge institutions (NHTV Breda, Fontys, ROC Tilburg), **hospitals (Amphia, Maxima Medical Center and Spaarne Gasthuis), industry (BlueTea, IC3D Media, Indicia, Noldus, Samure, Visionair3D), and the Netherlands Aerospace Center** are involved.

The project will monitor human communication in healthcare settings, build virtual humans on the basis of these data, and test the virtual humans in similar settings. The agents communicate in speech, facial expressions, and behavior with their human users in virtual, mixed, and augmented reality environments. Such interactive avatars can be deployed in several domains, particularly those domains for which interaction is critical, such as healthcare. These avatars can support training of caregivers, or provide patient information.

DAF Technology Lab, Virtual & Mixed Reality

PI: Prof. Dr. Max Louwerse

Philanthropic donation **PACCAR**

The DAF technology Lab is a virtual and mixed reality environment at the Tilburg University campus that is built to stimulate immersive education, innovative interdisciplinary research and corporate partnerships. The DAF Technology Lab provides high-tech facilities for students, researchers, and the business community. The combination of technology and behavioral sciences expertise offers unique possibilities for innovative teaching and research.

The DAF Technology Lab consists of two spaces: the Experience Room and the Research Room. In the Experience Room of the DAF Technology Lab, eight projectors deliver razor-sharp 2D or 3D images on all four walls. Groups of up to fifteen people can thus experience an intense level of realism in various virtual environments. Interaction with this virtual reality is achieved by using a remote control.

The Experience Room provides a unique collaborative mixed reality environment ideal for collaborative training, teaching, and research opportunities. The research space contains facilities to observe, register, and analyze data recorded by sensing technologies in the Experience Room, as well as to program new virtual reality situations.

CAMPIONE, Virtual & Mixed Reality

Subproject PI: Prof. Dr. Max Louwerse

Funding: European Union, OPZuid, Ministry of Economic Affairs, Province of Noord-Brabant, City of Tilburg, City of Gilze-Rijen. Total funding (including co-financing): 12.000.000 euro; funding Tilburg University: 1.300.000 euro.

The CAMPIONE project, including **33 partners**, focuses on Smart Industry. In CAMPIONE condition-based maintenance plays a central role, that is, the monitoring of the actual condition of asset (e.g., machinery at plants) to decide what maintenance needs to be done. By being able to predict when the asset breaks down, maintenance can be planned ahead with little downtime.

The role of Tilburg University is to investigate three specific research questions with regard to the training of personnel:

What are the differences between different training platforms, such as virtual reality or mixed reality compared to other forms of training;
Do individual differences explain learning gains in different platforms, for instance because of knowledge background and expertise;
Can learning gains be predicted not after training, but during training itself, using behavioral and (neuro)physiological modalities.
The answer to these questions comes from the use of extensive sensing technologies measurements and the use of virtual and mixed reality simulations.

Re-assessing Vincent van Gogh's use of color using digital reconstructions: lessons for the conservation and interpretation of paintings and drawings

PI: Prof. Dr. Eric Postma

Funding: NWO, **Van Gogh Museum; Cultural Heritage Agency of the Netherlands**. Total budget: 746.419 euro

In time, Vincent van Gogh's (1853-1890) works have significantly changed in appearance due to color degradation. Digital reconstructions that are firmly based on in-depth studies of the colors used, will help to envisage how the artist's works may have looked at the time of creation, prior to the effects of discoloration. Using advanced digital methods, the virtual reconstructions will be rendered for different lighting conditions. A hand in hand approach will be taken towards the research, conservation and treatment of works included in this project. Although starting from Van Gogh, the project pertains in particular to the broader scope of late nineteenth century art works, as well as to the conservation and restoration of drawings and paintings in general.

L2TOR: Second Language Tutoring using Social Robots

PI: Plymouth University; Co-PI: Dr. Paul Vogt

Funding: European Commission. Total funding: 3.042.562 euro; funding Tilburg University: 542.238 euro

Most children in Europe will be required to fluently use two or more languages. As language acquisition benefits from early, personalized and interactive tutoring, current language tutoring is often falling short. The L2TOR project capitalizes on recent developments in human-robot interaction, in which the use of social robots in the context of teaching and tutoring is being explored.

Social robots have marked benefits over screen-based tutoring technologies, and have positive impacts on motivation in learners and their learning outcomes. L2TOR will further the science and technology of language tutoring robots, with a strong focus on multimodal interactive tutoring for young children.

Data2Game: Enhanced Efficacy of Computerised Training via Player Modeling and Individually Tailored Scenarios

PI: University of Twente; Co-PI: Dr. Sander Bakkes, Prof. Dr. Pieter Spronck

Funding: NWO, **Thales Research & Technology Enschede (T-Xchange), Fire department Twente**. Total: 735.115 euro

Data2Game investigates how the content of serious games can be adapted automatically to the learning needs of individual players. The project aims at narrative games for training decision-making skills, such as the games developed by project partner Thales/T-Xchange.

In these games, virtual advisors give the player advice on specific dilemmas. In Data2Game, these words of advice are generated automatically. The content and difficulty level are adapted to individual players' needs, based on data about their behavior both within and outside of the game. The learning effects of this attenuation are being tested at the fire department Twente, for whom the project develops a game.

Automated Emotion Recognition for Adaptive Learning Environments in Virtual Reality

PI: Dr. Paul Vogt

Funding: NWO, **Publisher Zwijsen**: 21.000 euro

Digital learning environments facilitate learning, e.g. when learning a foreign language. Generally, such learning environments offer generic tasks, which are not attuned to the needs of specific users. To

enhance learning, we need to make digital learning environments adaptive, such that they match the capacities, level and progress of each individual user. This project aims to investigate how such an interactive and adaptive learning environment can be developed for adult learners who take an intensive second language course. The expected result is the ideal starting point for innovations in designing interactive and adaptive learning environments in the field of education.

Code Brabant

Natural Language Technologies

Co-PI: Lisa Rombout

Code Brabant is an initiative of Tilburg University, **Library Midden-Brabant**, and the Jheronimus Academy of Data Science, with the aim of making coding accessible to everyone, e.g., learning to program a video game, design a computer animation, or building a robot. Code Brabant organizes CoderDojo's, workshops and other events focused on programming. Code Brabant also collaborates with various partners providing free workshops for traditionally underrepresented groups in programming, or children for whom other workshops are inaccessible. Such partners include **VHTO, the Dutch organization for women and girls in STEM, and the Tilburgse Taalklassen**, who teach Dutch to children of immigrants.

User Profiling

Natural Language Technologies

PI: Prof. Dr. Max Louwerse

Private funding: 300.000 euro

The purpose of this project is to identify the linguistic and non-linguistic features in large amounts of data to predict user personality and behavior. Can algorithms extract those linguistic features from language data that allow us to predict the personality of users? Knowing the extent we can predict the user on a website, we can deliver information to users that is far more personalized

Associative and Interactive Learning of Grounded Linguistic Representations

Natural Language Technologies

PI: Ákos Kadar MA, Dr. Afra Alishahi, Dr. Grzegorz Chrupala

Funding: NWO Aspasia & Tilburg University: 200.000 euro

We aim to build an agent that learns to understand and produce language in a way that mimics key aspects of human language acquisition.

Firstly, we develop computational models for learning representations of language from utterances coupled with the visual input they co-occur with, such as images and their descriptions. We also propose methodologies to analyze and better understand the nature of the learned representations, at the level of individual words as well as multi-word constructions.

Secondly, we extend the basic multi-modal learning scenario to a setting where grounding is achieved via interaction in a simulated environment with an agent using language to achieve goals.

NetSpar, Data Science Solutions to Enhance Pension Communication

Natural Language Technologies

Co-PI: Prof. Dr. Eric Postma

Funding: NWO: 250.000 euro. Total budget: 500.000 euro (including co-financing)

The purpose of this project is to use the power of state-of-the-art data science methods to study and improve communications in the field of pensions and insurance in two areas: textual (from source, for example, e-mail between customers and pensioners) and visual (from the recipient, for example, by following eye movements of customers who read information on the pensioners' websites).

It also explores the possibilities of machine learning (algorithms) to facilitate communication in the area of pensions and insurance.

The intended output consists of academic papers, reports on the results obtained and software tools for performing the necessary improvements.

Natural Language Technologies

Learning to Communicate via Social and Linguistic Interaction (COSLI)

PI: Dr. Paul Vogt, Dr. Afra Alishahi

Funding: NWO: 217.000 euro

In this project, we develop an agent-based model that simulates naturalistic social and linguistic interactions in order to learn and use language in a human-like way. To this end, we first analyze an annotated corpus containing naturalistic observations of social interactions among children and their social environment. This way, we construct a statistical input generation engine for producing naturalistic linguistic and social input.

Second, we design an interaction-based agent model, which learns the meaning of words and how to use them together with non-verbal signals in a naturalistic way.

Third, we develop a multi-agent framework, in which agents equipped with the interaction-based model interact with each other, while learning how to interact socially and linguistically.

Learning Language through Dialogue

Natural Language Technologies

PI: Lieke Gelderloos MSc, Dr. Afra Alishahi, Prof. Dr. Eric Postma, Dr. Grzegorz Chrupala

Funding: Tilburg University

Children acquire language through interaction with their caregivers and peers, but computational models of language learning often overlook the interactive nature of language: learners are modeled as receivers of linguistic and perceptual input, rather than as participants, actively shaping their own input by partaking in dialogue. We study how interaction facilitates learning of form-meaning mappings.

We first study language learning in artificial agents performing cooperative tasks. Agents consist of neural networks with a language processing and a visual processing component, as well as a multimodal module that integrates the two. Behavior of the artificial models is then compared to human behavior in a data-driven way.

Automated news editing research project

These are hard times for news publishers. A struggling economy and growing competition in the ever more diverse media landscape compel them to cut costs as well as invest in innovation. The ongoing editorial automation creates an additional challenge. Other industries have developed techniques that could help editors, but these have yet to be “translated” to user-friendly systems to facilitate editorial processes.

The lecture Media, Interaction & Narration initiated this project. The lecture consists of 5 Fontys higher educations: Journalism, Communication, Economy, ICT and Arts. Within it, both teaching and research take place. This continuous research focusses on the influence of technology on storytelling. Both teachers and students are involved with this research. The Fontys lecture “Media, Interaction & Narration”, along with parties from the editing industry, has taken the initiative to research this Terra Incognita in a practical manner. Together we choose the research that springs from the “Natural Language Processing” area of expertise: the automated generation of language.

The application from this area are taking of in American journalism. In this industry, it is known as Automated Journalism or Robot Journalism. In the Netherlands and the Dutch language there are no real developments worth mentioning. The research into automated news editing was started to answer the following question:

How can proven and yet to be developed technologies from the field of Natural Language Processing contribute to automating news editing and the output of journalism?

The 4-year research will focus on developing algorithms (robots) as well as the impact of the technological developments on the field of journalism. The impact will be researched both from the viewpoint of news creators and news consumers. Within this research we will develop two prototypes that, together, will form the editorial system. Researchers, journalists, teachers and students will use this system before and after the project. We will share research outcomes with editing firms, at scientific

conferences, in publications in (professional) magazines, meetings with other educators using presentations and summarizing publications.

Research structure

In this research, we combine methods from several domains. We build upon the results of previous endeavors from the field of Natural Language Processing (NLP), Contextual Design, Media Studies and Journalism Studies. Insights from the field of NLP will be used in building the automated editorial system. In addition to this, we use knowledge from the domain of contextual design to determine how this system can be embedded in an editing environment. Lastly, we use methods from the classic field of Media Studies and Journalism Studies to define the media consumers' needs. By combining methods and fields, we make sure we build a system that serves the needs of both journalism and news consumers.

These will be the 4 lines of research:

Development from NLP (The technology behind the system)

Application from Contextual Design (Designing the editorial system)

Evaluation by Media Studies (Assessment of the editorial output: the news)

Reflection on research for future education in Journalism

Ambitious Partnership

These partners contribute to the research project: Tilburg University, **Persgroep, NDP News Media and the Association of research journalists**. Together we want to take a giant leap in automating news editing in traditional media companies. We have the ambition to help improve the quality of journalistic stories by using innovation.

Project Titel : Automatische nieuwsredactie (Robotjournalistiek)

Het onderzoek van de kenniskring van het Fontys Lectoraat Media, Interactie en Narratie helpt de traditionele uitgeverij zijn positie in het medialandschap te herpakken. Het haalt bestaande en bewezen technieken uit niet-journalistieke onderzoeksdomeinen en vormt deze om naar tools die het redactieproces gedeeltelijk automatiseren. Het zoekt naar oplossingen op de lange termijn.

Dit onderzoek richt zich daarvoor enerzijds op de ontwikkeling van nieuwe algoritmes die de taken van een journalist kunnen overnemen (onderzoek vanuit het domein Machine Learning & Big Data), en anderzijds op de impact van deze technologische ontwikkelingen op het redactieproces (traditioneel onderzoek vanuit het domein Media Studies). Door deze interdisciplinaire aanpak kan dit onderzoek niet alleen een oplossing bieden voor het probleem vanuit de branche, maar mogelijk zelfs een verbetering van het redactionele proces faciliteren, waardoor dit leidt tot een kwaliteitsimpuls voor het journalistieke verhaal.

Contactpersoon / projectmanager : Jorge Alves Lino.

Start-ups Broeinst Brabant - Fontys

Broeinst Brabant is een samenwerkingsverband tussen De Persgroep, Fontys Hogeschool Journalistiek, de Bibliotheek Midden-Brabant en Stichting Het Centrum voor Ondernemerschap (CVO). Samen faciliteren deze partijen de groei van journalistieke start-ups met als doel vernieuwende impulsen te geven aan de regionale journalistiek. Studenten van Fontys Hogeschool Journalistiek bedenken en ontwikkelen binnen een onderwijscontext nieuwe journalistieke concepten. Kansrijke concepten en start-ups krijgen vervolgens de kans om zich binnen de professionele organisatie van De Persgroep te bewijzen. De start-ups krijgen ondersteuning van het CVO op het gebied van ondernemerschap. De Bibliotheek Midden-Brabant faciliteert publiekstesten. Het project Broeinst Brabant valt onder de Regeling Regionale Journalistieke Samenwerking. Contactpersoon: Bart van Teeffelen

Redactie 360

Redactie 360 bestaat uit Eveline Verwater en Maartje Groenen (www.redactie360.fhj.nl). Zij hebben zich gespecialiseerd in 360-video's en maken een serie voor Brabants Dagblad.

Adrien Stanziani

Adrien Stanziani (www.adrien-stanziani.com) komt van buiten FHJ. Hij is een sneltekenaar die inmiddels rechtbanktekening maakt voor Algemeen Dagblad Regio. Voor het Eindhovens Dagblad ontwikkelt hij een concept om live online te tekenen bij ontwikkelend nieuws.

Spectra

Spectra bestaat uit Chaimae Arragoum, Aminanta Minte en Marloes Leezer. Zij adviseren redacties hoe ze meer diversiteit (diverse culturen) kunnen krijgen in hun verhalen. Spectra is op dit moment, op basis van een pilot bij BNdeStem, haar opties op een rij aan het zetten. Een tweede pilot bij De Persgroep is daarbij een mogelijke optie.

WhatsNew

WhatsNew bestaat uit Bram Steijns, Femke Molenaar en Inge de Bruijn (www.facebook.com/bijmeteenappje). Zij hebben een minipodcast ontwikkeld voor WhatsApp. Daarnaast bieden ze gepersonaliseerde live-blogs via WhatsApp aan. WhatsNew heeft een pilot gedraaid bij het ED. Zij evalueren zelf en met het ED wat hun volgende richting wordt.

Younique Games

Younique Games bestaat uit Itske Eertink en Linda Bak (<http://youniquegames.nl/>). Zij hebben een eenvoudige game ontwikkeld om MBO'ers te informeren over actuele thema's. Hebben een pilot gedraaid bij BNdeStem. Dat heeft verrassende cijfers opgeleverd over bereik en commitment onder een doelgroep onder de 30 jaar. Voor De Persgroep en Younique Games een reden om te praten over een verdere samenwerking.

Journalistieke Kamer

De journalistieke kamer bestaat onder meer uit Saskia Loomans en Lars Mulitze (<http://dejournalistiekamer.nl/>). Deze start-up heeft een passie: politiek nieuws voor jongeren. Samen met BNdeStem ontwikkelen ze hun format. De laatste tijd heeft die ontwikkeling stilgestaan ivm andere prioriteiten. Vanaf september gaat deze start-up onder de nieuwe naam What The Hague verder met hun missie.

NIEUWE STARTUPS Q3 2018 :

CAST-Lab

Ontwikkeling vanuit Melis Gieterijen om "digital warehousing" op te zetten, waarbij in plaats van fysieke voorraad een virtuele voorraad digitaal wordt aangelegd. Deze digitale voorraad kan onmiddellijk op verzoek worden gerealiseerd middels 3D printing en giet-technieken (Casting).

AEROSPACIAL

Drone technologieën met echte onbemande vliegtuigen (UAV's). Hierdoor kunnen vele helikopter en vliegtuig verkenningsvluchten tegen een fractie van de kosten worden uitgevoerd. De multi-copter drones zijn niet in staat dergelijke lange vluchttijden en -afstanden te realiseren

NextGen CV

Bestaande huisinstallaties van het gas afhalen met behulp van de combinatie van heteluchtverwarming en elektriciteit. Proof of concept ontwikkeling met brabantse maakbedrijven en testen bij woningstichting in Q1 2019

STRATEGISCHE PARTNERS SHORTLIST :

Wärtsilä

Interpolis

Port of Rotterdam

GVT

DafPaccar

KPMG

CAPI

XPO

IFF

Focal Meditech

Met al deze bedrijven loopt op dit moment de discussie over samenwerking en is de fase aangebroken om intentie-overeenkomsten voor samenwerking met mindlabs op te stellen.

(voorlopig) niet :

Fuji

Efteling

Nokia

Daarnaast zijn er enkele tientallen contacten voor verdere uitbreiding van ecosysteem MindLabs.