Human Robot Interaction for seniors

Do you want to work with robots? Do you want to work with human – robot – interaction for seniors at home?

This is a project for those who want to work with robots and seniors at home. A challenge is to explore and experiment with what sort of robot companion elderly people would prefer to have in their homes. One particular area is safety and communication in the home. Will a moving safety robot be able to replace existing stationary technologies like for example stove alarm and wearable technologies like safety alarms?

The design task is to explore how we might interact with robots at home. For example, ways of controlling the robot, turning it on and off, steering it, and ways of moving together with it. What kind of interaction mechanisms are possible and can be explored? The level of automation might be examined; what is desired to be automated to the robot, and what should be manually controlled by the user? Explore human – robot interaction mechanisms.

Being surrounded by robots over time at home, what kind of challenges can be seen? In what way is the movement pattern and movement speed of importance? In what way can this be controlled and configured by the user?

Robots with sensors that monitor and sense activities of daily living capture data. In what way is it possible to know what is recorded and stored of activity data?   How can the user control the sensors, like turning various sensors on and off and handling data that is captured?

Homes are very different; both indoors and outdoors. What challenges arise when robots are used in and between specific rooms; with furniture's, clutter and inhabitants and guests coming and going?

There are currently two typical robots in use at home; robotic lawn movers and robot vacuum robots. This could be used as inspiration for exploring human – robot interaction.

This project is linked to the MECS project at IfI. The MECS project (Multimodal Elderly Care System) is a research project, with members both from the ROBIN group and Design of Information system group. In the MECS project the aim is to "create and evaluate multimodal human supportive systems that are able to sense, learn and predict future events". Supervisors for this class project

Please contact me for questions or more details.

Jo
Jo.herstad@ifi.uio.no

Design brief: INF2260/4060 Fall semester 2016

Design task:

Social contact between elderly at home

The BRIS project (in Norwegian: "Brukergrensesnitt for velferdsteknologi i stua") is about creating and stimulating video communication between elderly people living in their homes and care personnel from the municipality, and between the elderly themselves.

The design task will be to design a prototype for a user interface and/or a service so that elderly people can meet socially through video conference. In Norwegian, "kaffeslabberas" is an unpretentious social meeting consisting of coffee and talk. How can the technology stimulate the elderly's wishes for meeting socially in this way?

The user interface will need to be very simple and hide (parts of) the underlying technology. The BRIS project has an ambition that also elderly people with mild dementia will be able to use this technology. The design task will include how to initiate a video conference, what will they see of each other and how will the social meeting be presented? The user interface will probably also need to handle unforeseen situations, for example may the equipment not function, or the user calls a person that is not responding – and the user interface will need to show what happens in a way that is easy to understand and act upon for the user.

Velferdsfabrikken

Velferdsfabrikken is a new startup company with owners with expertise and previous work experience within telecommunication and municipal services. Velferdsfabrikken works together with partners such as municipalities and technology companies. Guri Verne is a post.doc at the Design group at IfI. She does research in the BRIS project.

Snapsale student project fall 2016

Introduction

Snapsale is a marketplace app where users can list stuff for sale and buy things from each other. The service was launched in 2015, and has become very popular among young women, who are selling dresses, handbags, shoes, textbooks and other goods.

The challenge

Users have to arrange to meet and exchange money and goods themselves. This is usually done in person, and the purchase price is paid either in cash or with e.g Vipps. Then the item changes hands. However, it is a hassle to coordinate a meeting like this, and some users will not have sufficient motivation to buy a bus ticket to go and pick up a low value item.

Some users will pay online and mail the item, but this is a risky approach, as either the seller or buyer will have to take a chance and trust the other party. It is also costly, because of shipping fees.

The challenge is to design an innovative solution to the problem of handing over a physical item from seller to buyer. Ideally, the solution should be low-cost, since the buyers of second hand items are very sensitive to price. Safety, and the ability to inspect an item before making the final purchase decision is also important.

Only highly motivated and dedicated students should apply for this project.

SINTEF
DARWIN. Virtual Reality serious gaming.

In this project, we want to build an innovative virtual reality (VR) game to compare and assess the different ways of handling the response after a collision between a ship cruise and an oil tanker.

The DARWIN project aims to improve the responses of the European community to both natural crises (e.g. flooding, earthquakes) and man-made disasters (e.g. cyber attacks). The project will develop guidelines which are aimed at policy makers, service providers, and first responders. They will be tested using a serious game combining Air Traffic Management (ATM) and Healthcare.

The game scenario consists of a collision between a cruise ship with 1800 passengers on board and an oil tanker outside the Swedish east coast. Rough weather and miscommunication between the cruise ship and the oil tanker causes a collision, resulting in severe damages to both ships. The collision sparks a fire on the oil tanker, which spreads on the cruise ship. The cruise ship fire is extinguished by the crew after it burned two decks. The injury panorama among the crew and passengers is different levels of burns, falling down injuries, smoke inhalations, cuts and bruises, cases of shocks, alcohol intoxications, as well as reports of passengers jumping in panic in the sea. While the oil tanker continues to burn away from the ship cruise, all the 1800 passengers need to be evacuated in bad conditions due to the weather. The management of the crisis involves several organizations, institutional bodies, and authorities.

The game consists of an interactive common operational picture (COP), allowing the player to manage the response from the scaling of the hospitals to the management of the many vehicles. Visualizations of the current state of the situation and mathematical simulations are also provided. Finally, the game includes metrics to determine how well the player and the guidelines she applies perform.

In this project, we want to explore the possibilities offered by the young VR technology, especially with the "room scale" way of interacting. It is possible to build and test user unforeseen user interfaces. We are also interesting about the collaboration between players in VR environments and the real world. The gamification of the whole process is also an interesting project.

In terms of technologies, we use the Unreal Engine and Steam VR (HTC Vive headset). While there is a possibility to develop in C++, or integrate any external software (for example Matlab or C# tools) the students can also design prototypes without writing code, using Unreal's Blueprints and our help.

Two groups of students can work on this project.

Contact: Antoine Pultier - Antoine.Pultier@sintef.no

Sunnaas Rehabilitation Hospital

Sunnaas Hospital is Norway's largest specialist hospital in the field of physical medicine and rehabilitation, capacity about 160 beds in Oslo and Nesodden.

The hospital provides multidisciplinary rehabilitation for patients with complex functional impairment following illness or injury. In addition to the actual rehabilitation process, training and advising patients and relatives and conducting research are important activities at Sunnaas. www.sunnaas.no

Project:

Active on Wheels

- To estimate energy use through a mobile device that collects acceleration and pulse data from such patients in a clinical physiology lab.

- Develop a training/ life-style program that motivates patients for physical activity.

- Require help in designing and prototyping such a training application based on universal design principles and gamification.

  Contact: Hani Murad , hanim@ifi.uio.no, tlf 90150029

Sunnaas Rehabilitation Hospital

Sunnaas Hospital is Norway's largest specialist hospital in the field of physical medicine and rehabilitation, capacity about 160 beds in Oslo and Nesodden.

The hospital provides multidisciplinary rehabilitation for patients with complex functional impairment following illness or injury. In addition to the actual rehabilitation process, training and advising patients and relatives and conducting research are important activities at Sunnaas. www.sunnaas.no

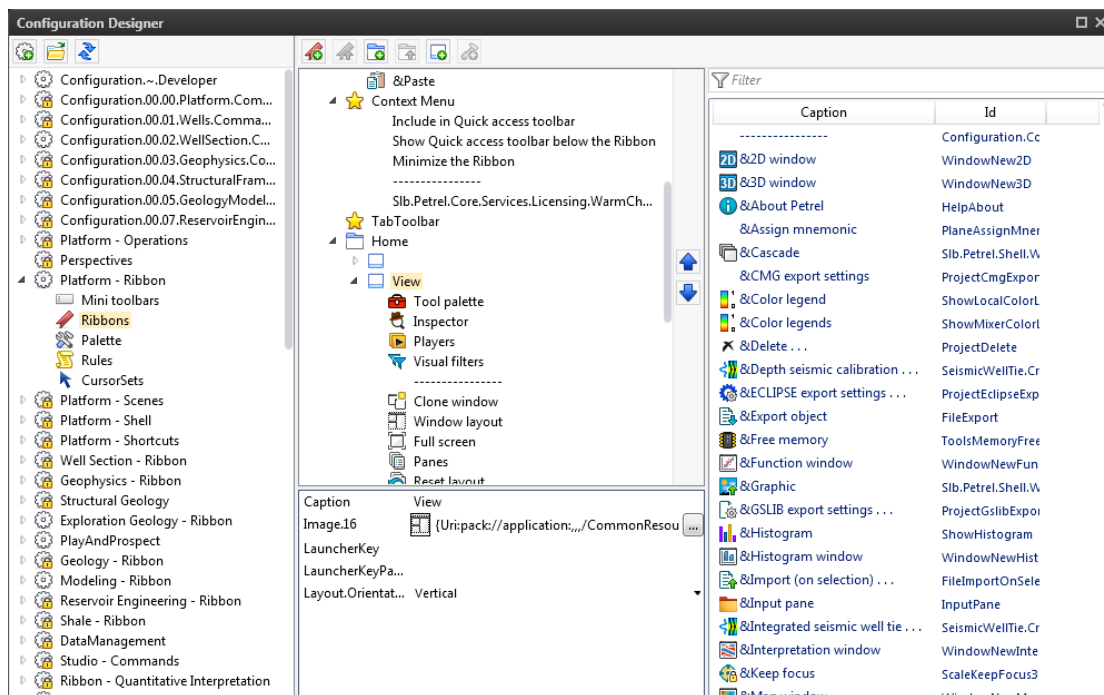**Project:**

Interactive rehabilitation

- The main goal of the project is to connect with the patients before admission to the hospital and thereby improve the user experience for the patients, both before, during and after the hospitalization.

- Disseminate information about the hospital, the rehabilitation program and practical information.

- Gather relevant information from the patient to the interdisciplinary team before admission, through self-report forms and the patient's own defined rehabilitation-goals.

- Require help in designing and prototyping such an app.

Contact: Hani Murad , hanim@ifi.uio.no, tlf 90150029

SCHLUMBERGER

Petrel uses a configuration called Designer to configure most of the user interfaces. It also lets the business people customize the UI without rebuilding or even re-starting the application.

Designer has changed how we work with Petrel, but of course, there are some challenges. We need you to look at how it works today, how our users are using it and how we can improve its usability. We can even look at creating a web application instead of the current windows specific implementation to make the Designer more accessible outside of Petrel.

Contact: Hani. We will provide the name of the contact as Schlumberger later.

SINTEF
NextGenDST Next Generation Decision Support Tools

The goal of the project is to improve performance within time-critical complex domains, such as emergency management, Air Traffic Management (ATM), maritime and train dispatching, by developing a new generation decision support tool (NextGenDST).

We want to find good ways to communicate with the algorithms around us. For example, a tool that you develop would enable the operator in a train dispatching centre to tell the system in which sequence he plans to dispatch the trains by tactile interaction and/or augmented reality techniques. The tool would then propose better sequence by using 3D animation and present how this would affect punctuality. In the long run, this will improve human operators' trust to the decision support tool, increase their competence (help them understand why and how to make better decisions) and the quality of decisions they make.

Some of the question you might explore are:
- How to efficiently capture human's intentions, preferences and what are they able to implement in the given situation during decision making processes?
- How to recommend decisions, explain the rationale behind them, and explain their impact in a way that improve performance?

Students would have access to SINTEF's Virtual Reality/ Augmented Reality Lab.

One group of students can work on this project.
Contact: Amela Karahasanovic - amela@sintef.no

Connected
Smartness

Smart Home Assistant
The Handy Uses of a ~~Home Computer~~

- Planning a dinner menu
- Balancing bank accounts
- Doing school homework
- Figuring out income tax
- Printing invitations
- Keeping the budget

While technological products are rapidly becoming labelled with buzzwords like 'smart', 'intelligent' and 'networked', the nature of their interaction has largely remained similar to their un-intelligent and un-networked counterparts. The intent of these smart devices is largely focused on improving efficiency by automating tasks around the home - like a robotic attendant. Moreover, these devices tend to take 'futuristic' and uncommunicative forms with most of the interface being offloaded to apps and voice based interfaces.

In this project we try and **re-imagine the intent, form and interaction for a voice based smart assistive device** like the Amazon Echo or Google Home. We will be working with publicly available APIs and sensors to design and prototype new ways of interacting and living with these devices in the home. *Expect a lot of tinkering and exploration and no ready made answers!*

Design Task

How might we re-imagine the positioning and interactions of voice based smart devices in our homes that goes beyond the notion of robotic attendants?

youngexpressions.no
smartsculpture.eu

This project is a part of the Norwegian subproject of the EU project – The People's Smart Sculpture (PS2) which is a collaboration between 12 project partners across 8 countries. The project aims at stimulating participatory culture and greater civic participation in European countries.

Connected services for the energy and utilities industries

About Accenture:
Accenture is a global management consulting, technology services and outsourcing company, with more than 305,000 people serving clients in more than 120 countries

Challenge:
How may emerging technologies and connected services be used to create innovative and sustainable solutions within the energy and utilities industries?

We are looking for:
Motivated students who are great team players, and ready to deliver a knockout concept and prototype. You will be part of a scrum development team, using a lightweight scrum methodology for the design and delivery process.
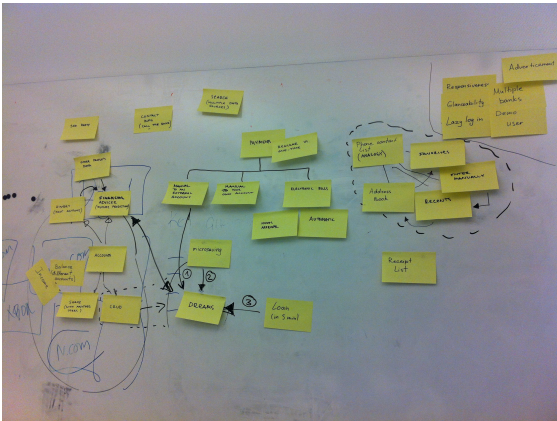
Students working with Accenture will have to use IBM Bluemix for their prototype, which is a cloud-based platform for developing apps. IBM Bluemix requires a minimum of programming skills, and students will have to learn how to use this platform, thus a willingness to learn new technologies is required.

Accenture will provide:
- Weekly follow-ups with the student design teams
- A dedicated coach for each team
- Introduction to IBM Bluemix, and the opportunity to learn and use this cloud-based development platform for apps
- The chance to work in a scrum-team, and a sense of real life project work
- Access to IoT-related gadgets to be used as part of the prototype, i.e. iBeacons, Google glasses, Raspberry Pi´s etc.
- Access to technology- and industry experts

Redesigning sustainable consumption

Background: Environmental sustainability has been argued to be an emerging business mega-trend. However, services supporting sustainable consumption have a long way to go to reach the mass markets. Many materials used in smart phones seriously deplete available resources of metals and minerals.

Who are we? GreenPhones buys, repairs and resells second-hand mobile phones and tablets. In addition to our store in Tvedestrand, we currently have a basic website and an online store via Finn.no.

What we need: Currently, most of the second-hand sales are made over the counter. This we now wish to improve. We have plans to create **a digital point of sales** for reselling of used phones and tablets. Could you think of compelling new concepts and designs for a digital point of sales?

Knut Andre Fiddan   knut@greenphones.no   M: 94 32 78 74
Ragnhild Halvorsrud   Ragnhild.Halvorsrud@sintef.no   M: 97 73 88 83

greenphones no   SINTEF

# How might we create a better experience for booking meeting rooms?

Brief

Designit just moved to a new office and we now have several different meeting rooms we can book for internal meetings, meetings with clients, workshops, etc… With your help we hope to create a better system than the one we currently use for booking meeting rooms, improving both the efficiency and the experience.

Process

You will follow Designit's five steps Strategic Design Process: disruptive insights, future vision, experience roadmap, experience design, continuos delivery. You will have to choose the methods you are going to use to research, design and test your work, and explain why you are using them.

In this project you will have to consider the complete user journey of the users: from the first contact with the system to the actual interaction. What does the user need? What do they do? What problems do they encounter?

Disruptive insights | Future vision | Experience roadmap | Experience design | Continuous delivery
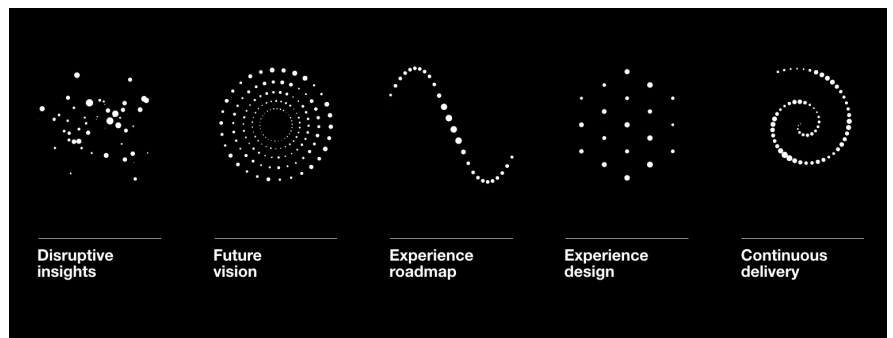
What is Designit

Designit is an international strategic design firm with over 400 designers, strategists and developers. We combine design, business and technology to solve problems, improve lives and create new business growth.

Who are we looking for

You are self-driven, you are motivated, you want to learn how to gather data, produce insights and to prototype, test and iterate on your design.

Ideas for INF2260 / INF4060

For more information contact
Hakeem Atif
haq@telenor.digital
98284800

Measure Pollution:

Imagine a device that measures air quality around you, and is using your phone as platform to get an understanding of the environment. Imagine hundreds or thousands of people doing the same. What would that device look like, what could we do with the data. Would you change your behaviour if you had better knowledge about the air that surrounds you? **(Internet of things, Big Data)**

Photo Service:

We have a photo storing service that works, and we are wondering how do we make it more engaging. What feature could complement a private storage service with high quality photos while creating social features?
Are there relevant sharing channels, given the transition of photos from scarce artefacts to ephemeral conversation pieces. **(Cloud, social)**

Pimp your next phone call with some AI:

Include a digital personal assistant that can be activated by any party in a phone conversation that can provide live updates on weather, general fact checks or help booking a table at your favourite restaurant - all in real time. How would you use AI to take phone calls to another level. **(Universal Design, accessibility)**

RE-THINKING THE MOBILE PHONE

CONTEXT

We can't imagine living without our smart phones. Every year, another billion and a half of new mobile phones are sold worldwide. At the same time we know it is one the most unsustainable consumer goods. This year I bought my 7th new mobile phone. How many phones did you already consume in your life?

CHALLENGE

Your design challenge is to find a design option (app, add-on, component, service) that will inspire users to hang on to the mobile phone they already own, instead of buying a new one.

ACCESS

Through the SMART project* you will have access to a range of experts who can talk with you about these negative social and environmental impacts. We also have contacts with technology designers in the mobile phone sector.

SUPERVISION

UiO : SMART

Maja van der Velden
majava@ifi.uio.no

I am the leader of the research on mobile phones in the SMART project* and will be your main supervisor. This is a project for students who are genuinely interested in looking for creative sustainable solutions in technology design.

* The SMART project is a 4-year research project funded by the European Commission. Its main aim is research that will promote global sustainable development. We look at the lifecycles of two products, mobile phones and clothes, and a large international team of scholars will translate research findings in new policy and regulation, promoting more sustainable products.

WHEN GOOD
OLD PEOPLE
INTERACT WITH BRAND NEW
TANGIBLE TECHNOLOGY!

PROJECT AIM

The design task is to explore how we might apply tangible interaction to help senior citizens with everyday tasks. If you have any technologies in mind that you may want to explore you can work with that – or we can come up with something fun together. The project does not have a specific task or technology in mind, so you are free to bring any ideas to the table. Equipment budget will be available for promising ideas.

EXPECTATIONS

All prior six projects who completed on schedule in this course have all received final grade A, and been among the top 1-3 contestant in the course competition every year. Four research papers has also been co-written with the student members and published based on the work from these projects.

I ask that only groups with high ambitions aiming for top grades apply to this project. I intend to supervise this project myself and hold very high expectations from my students, but will in return provide dedicated supervision. This project is suitable for both bachelor and master level students.

INTERESTED OR CURIOUS?

Contact me for more details or any questions you might have for me.

joshi@ifi.uio.no

Project: ZmarTech

Societal Challenge:

Growing Public Health costs and diseases are considered to be one of our biggest global challenges.

Almost 70% of Norwegian health costs is related to our lifestyle, with an estimated total societal cost exceeding NOK 1.000 billion/year. Driving forces are our sleep-, sedentary- and sugar habits, but these three factors daily also cause cognitive deterioration. That is an enormous productivity leakage hitting individuals and society hard. But lifestyle habits are not easy to adjust or change.
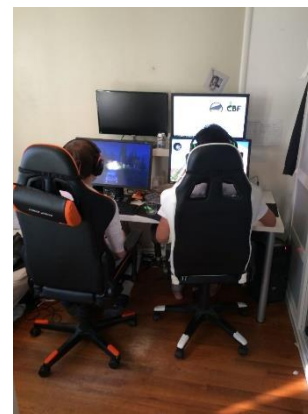
About Zmart:

Zmart Foundation is a start-up NGO operating as a network organization with professionals in all of the areas of behaviour economics. By "design thinking", we will create a national concept to help youth and their parents decide to adjust behaviour and to manage to do so through support brought to them by technology. We deliver knowledge, reminders, and rewards (gamification) in a complete package tailor made to suit our brain.

What we are aiming at:

We want to establish a creative team to initiate an open-minded technology evaluation process together with representatives of our young target group. This process is manly to evaluate any type of combinations of technology meeting future user specifications and Zmarts need to assist and "nudge" the users towards their goals. Designing an innovative solution, and possibly prototypes or other (partially) working technology, is part of the students tasks. The most valuable input to the design is: What is really cool in the eyes of the youngsters? Finding a low-cost solution is also of importance.

140 kids in Frigg Oslo Fotballklubb (11-12years old) will get a Zmart-workshop where we fill some knowledge gaps. Some of the participants will also test how a technology tool may help them discover a decision making process and not allow their autopilot to choose an option negative too their cognitive and physical health.

Interested or curious? Contact me for more details or any questions that you may have.
Lars Kogstad, lars@zmart.no, 93228962.

CityKids interactive game @ Sentralen

Interactive game design

Get creative and activate the beautiful floor space at Sentralen (http://www.sentralen.no/), Oslo´s newest culture house, with an interactive game at "CityKids" events. Augmented reality, a simulation, a roleplay, a treasure hunt or something else? – you decide what would be most engaging and fun.

"CityKids" at Sentralen is a living arena for exploration and creative activity. Children (1-8 years old) and their families engage in exciting multisensory activities which stimulate curiousity, creativity and learning.

CityKids events in 2016 have all "sold-out" (over 300 visitors per day!). We partner with students to design and offer new experiences.

Design task:

- How could interaction design and digital media be used to stimulate playful audience participation in a game scenario?

- How could the room itself provide game elements?

Stiftelsen Oslo Barnemuseum

Stiftelsen Oslo Barnemuseum is a non-profit cultural organization which creates and runs creative cultural activities and events for children and families. Founded in 2005, the long-term goal is to establish a permanent interactive children´s museum in Oslo. Oslo Barnemuseum is a partner of Sentralen, Oslo´s newest culture house. "CityKids" is the name of Oslo Barnemuseum´s events at Sentralen. CityKids is also part of the PS2 cooperation project with EU Creative Europe.
Facebook: https://www.facebook.com/oslobarnemuseum

CityKids exhibit design @ Sentralen

Exhibit interaction design: "What inspired you as a child?"

Inspiration plays a vital role in learning, motivation and building self-confidence for the future. "What inspired you as a child" is a planned exhibit which will highlight stories of childhood inspiration and show how childhood inspiration can play a role in later success.

The exhibit will profile successful people in Norway who are positive role models with what they considered to be their early inspirations. The exhibit will also engage visitors, both children and adults, by inviting them to contribute their own inspiration stories from childhood. Visitors will be able to put their mark on the exhibit and be lifted up together with the Norwegian heroes. These diverse stories will create positive feelings and will give children motivation and hope for the future.

The exhibit will be produced by Stiftelsen Oslo Barnemuseum, as part of the PS2 cooperation with EU Creative Europe, and will be implemented at Oslo´s newest culture house, Sentralen (http://www.sentralen.no/) , as part of new content for "CityKids".

Design task:

- How could interaction design and digital media be used to stimulate audience participation in collecting content for a new exhibit?

- How could the data collection process itself be designed as an interactive cultural experience?

Stiftelsen Oslo Barnemuseum
Stiftelsen Oslo Barnemuseum is a non-profit cultural organization which creates and runs creative cultural activities and events for children and families. Founded in 2005, the long-term goal is to establish a permanent interactive children´s museum in Oslo. Oslo Barnemuseum is a partner of Sentralen, Oslo´s newest culture house. "CityKids" is the name of Oslo Barnemuseum´s events at Sentralen. Facebook: https://www.facebook.com/oslobarnemuseum

Student projects INF 2260 / 4060

Realfagbiblioteket UiO

Short possibilities for cooperation based on our recent interests:

1) Science fiction – markedsføring, bestilling og bruk Vi har en unik samling Science fiction-bøker. Hvordan visualisere den i ulike sammenhenger og gjøre den enda mer kjent og brukt. Kan man gjøre det enklere å låne fra den, bygge "community" rundt den osv.
   http://www.ub.uio.no/bibliotekene/ureal/ureal/samlinger/scifi/

2) Realfag på norsk og nynorsk - våre bøker har emneord på norsk (også oversatt til nynorsk.) Vi har et vokabular på 13270 emner. Ulike programmer kan koble og visualisere emnene på ulikt vis. De er en hjelp inn i litteraturen fra biblioteksystemet. Hvordan kan de utnyttes og brukes bedre - eller i helt andre systemer og sammenhenger?
   https://app.uio.no/ub/emnesok/realfagstermer/

3) Biblioteket har tilgang på over 20000(?) elektroniske tidsskrifter og et stort antall elektroniske bøker. Disse finner man gjennom bibliotekkatalogen og via Google. Hvordan kan man visualisere utvalg av disse i det fysiske rommet og på nettet på ulike måter?

Contact: Alma og

Hugo Christian Huurdeman, han starter ved Realfagsbiblioteket 1. September, er fra Amsterdam og har masse erfaring med media og media art.

Interacting with Abstract Art

This project aims to create participatory urban digital art space
(possibly, with meaning).

Can you help envision creating a piece of digital art/graphiti/performance
jointly with others and expressing through
it some urban concern or promoting a value?

For inspiration, see

www.forbes.com/sites/kareanderson/2015/05/03/create-interactive-art-that-pulls-us-closer/#43a3060b6a82

Speculative and critical design encuraged

Contact: Alma
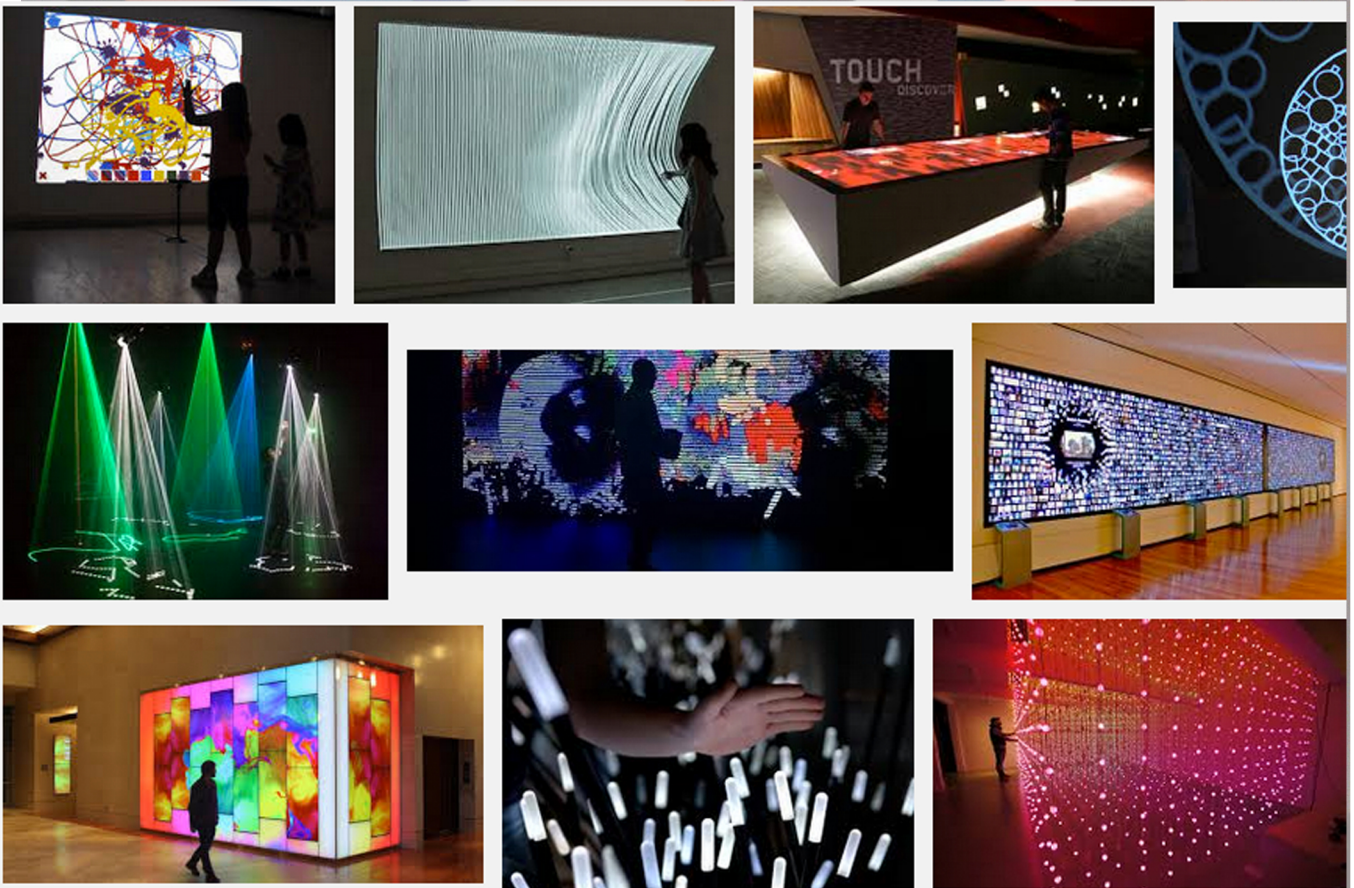
Student projects INF 2260 / 4060

Norwegian Museum of Science and Technology

Oslo Science Center offers playful learning for children and youth, as well as anyone else who is curious and playful. Here, one can-explore diverse phenomena, hands on. IN addition, the Center arranges diverse fun events filled with new experiences, as well as and maker fairs.

We would like students to focus on one of the two phenomena that we are interested in exploring:

1) Green house effect (drivhuseffekten). How can museum audiences learn what this is and gain some experiences related to the phenomenon?
2) The composition of the atmosphere

The science center is now working with a green zone and we would like to explore these concepts as possible addition to the green zone.
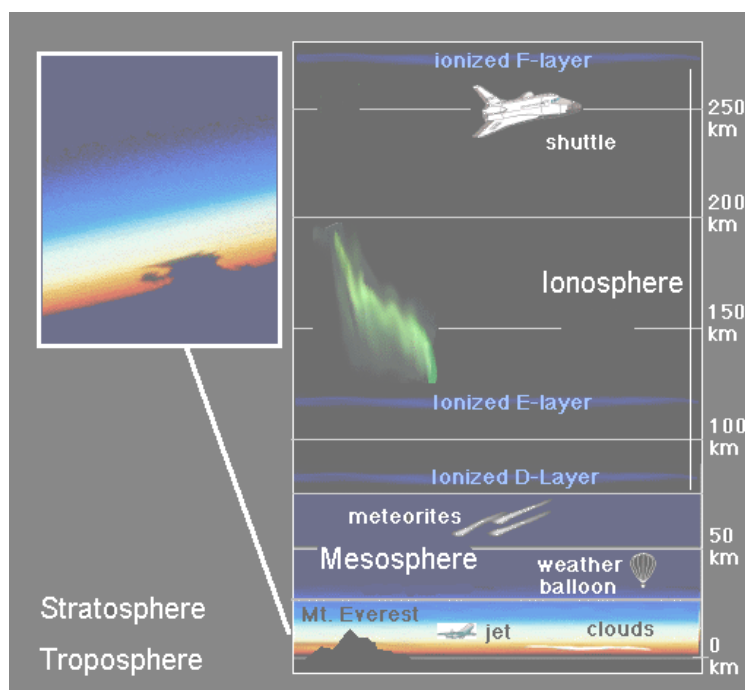
Contacts: Alma and
Jan Alfred Andersson
Leder Oslo Vitensenter
Norsk Teknisk Museum