MulPo

Multiple receiver, Position free wireless power transfer tech

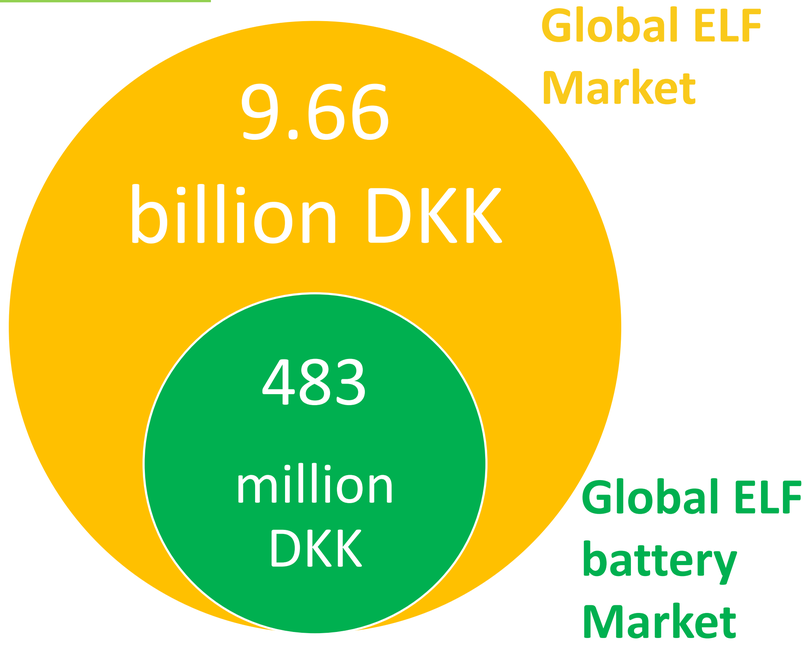
Digitalization, AI & Robotics

Batteryless electronic shelf label (ESL), wireless LED lighting

Pain

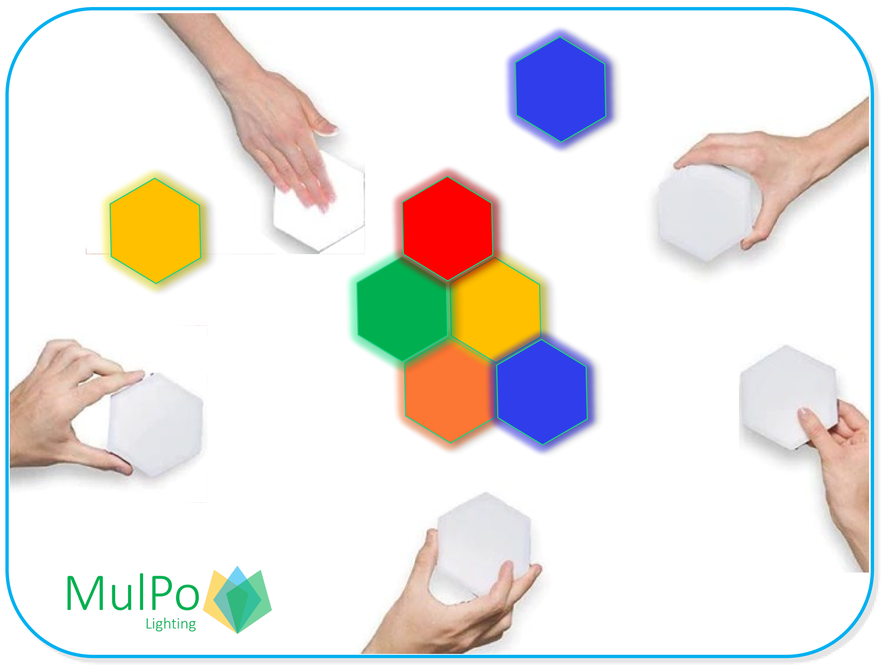
10000+Electronic shelf labels each supermarket;
4000+ Supermarkets in Denmark;
80 million button batteries every five years!

Market



Solution

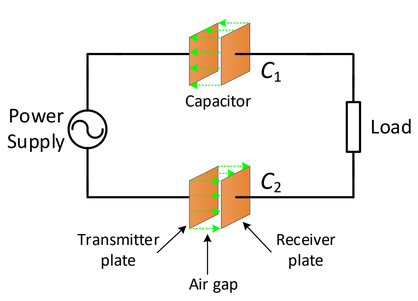
Batteryless electronic shelf label



MulPo wireless LED light

Technology Description---How capacitive power transfer works

- A capacitor (e.g. *C*1) can be measured when two metal plates are placed close to each other;
- Several such capacitors can be used to build a power path between the power supply and load;
- It works even if the transmitter plate and the receiver plate are separated by a distance, i.e. wireless;



Intellectual Property Rights

The technology is secured via **3 patent** applications.
We have FTO, no special approvals needed.

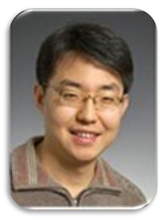
Team

Xu Chen
CEO

Per Resen Steenstrup
CMO

Jørgen Kejlberg
Business developer

Yi Dou
CTO



Zhe Zhang
Technical Advisor

Michael A.E. Andersen
Technical Advisor

Current State

TRL 6

- ✓ Supported by DTU Discovery and DTU Proof of Concept Funds;
- ✓ Minimum viable prototype ready;

Business opportunity and Call to action

- ❖ Creating spin-out
- ❖ Looking for investors and business partners
- ❖ Looking for interested customers

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DTU

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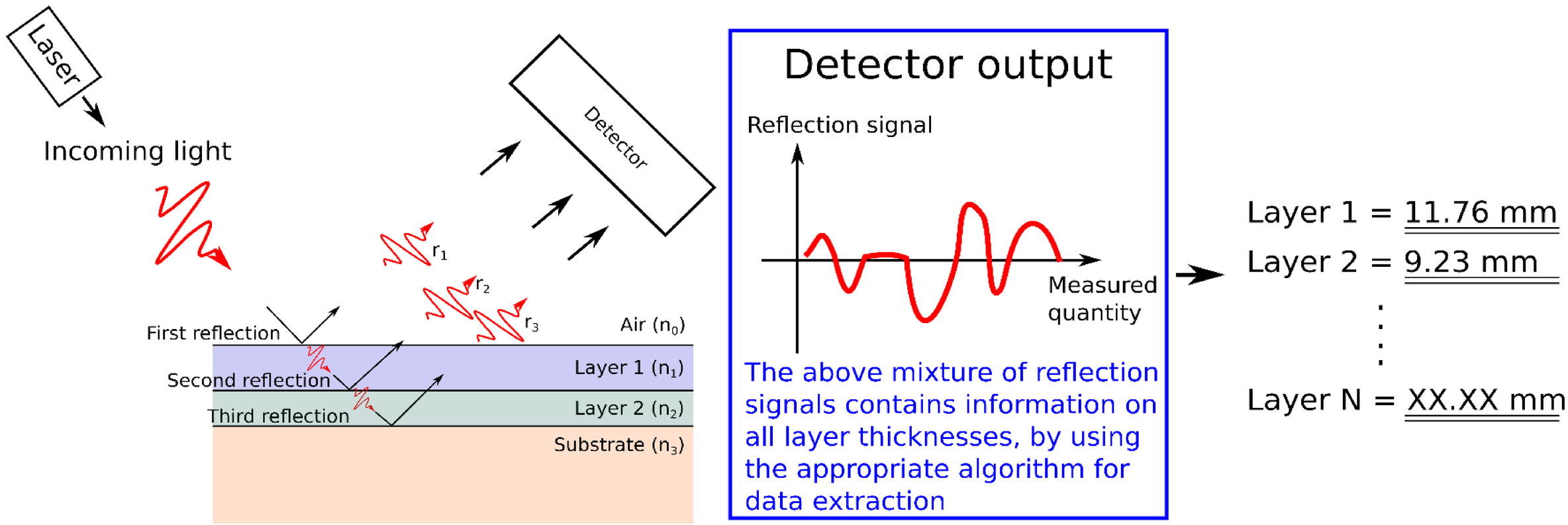
OptiLayer

Digitalization, AI & Robotics

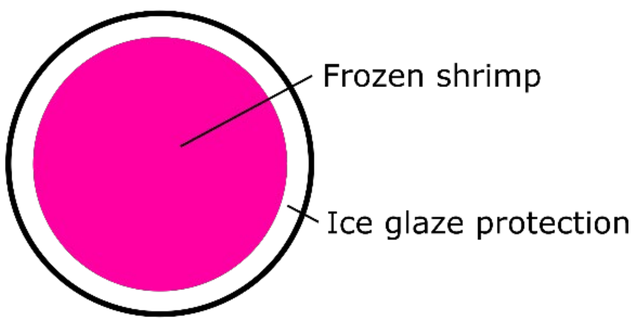
Non-contact, real-time measurements of layer thicknesses

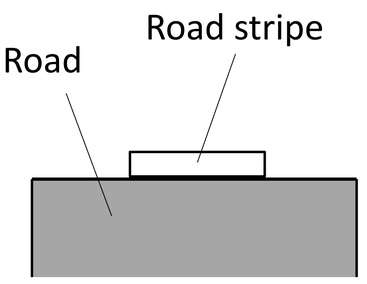


Schematic outline of the layer thickness determination. Measurements are direct, non-contact, non-destructive and real-time. Far-infrared frequencies allow for both good penetration depth into samples as well as a resolution depth < 1/100 of a mm.

The technology can be used to investigate both thin and thick, layered objects, and can be implemented in virtually any existing system. One particular use case is the determination of ice glaze layers on frozen seafood products during production. This allows the production facility to keep a known, optimal glazing thickness in order to maximize quality and adjust the amount of sold, unfrozen food. The market size for such technology is estimated up to 1 billion US dollars.

Example use cases





Technology Description

The technology relies on the ability of far-infrared radiation to be partly reflected from interfaces between many different non-conductive materials. A laser source provides an incoming signal, and a detector measures all reflections. A computer algorithm analyzes the results and estimates the thicknesses of all reflective layers in the object.

The layer materials should not contain liquid water and cannot be electrically conductive. Materials that conform to these requirements include **plastics, ice and various organic materials**, among others.

Intellectual Property Rights

A patent on using our technology for assessing the thickness of ice layers on a sample is in the PCT phase. The patent applicant is DTU, and the patent has EPO number 18208850.0 .

Additional patents relating to the technological solution are being planned.

Team

Simon L. Lange
PhD, Photonics Engineering
Director & Fundraiser

Thorsten Bæk
MSc, Photonics Engineering
R&D and production

Oscar G. Garcia
MSc, Photonics Engineering
R&D and production

Nicklas W. Svendsen
PhD, Design & Mechanical Engineering
Business development & Sales

Miriam Galbiati
PhD, Physics
Business & Organization development

Current State

The project is backed with a 1.5 MDKK InnoExplorer grant in the period June 2020 to May 2021 and is additionally part of the Center for Applied Photonics, which is led by FORCE. The current TRL is 2 and is sought to be taken to TRL 5 within 1 year.

The first prototype is being developed in collaboration with the first customer.

The product is planned for market launch by the end of 2022.

Business opportunity and Call to action

The current team is seeking to make a spin-out by summer 2021. For this purpose, we are looking for:

1. Early stage investments in the order of 300,000 to 500,000 DKK
2. Potential co-developers of fully integrated solutions, e.g. a combination of our technology with a range of other sensor technologies
3. Industrial connections to identify more suitable problems to solve

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Ultra-high rate quantum random number generator

A security solution for the quantum future

Digitalization, AI & Robotics

Why are random numbers so important?

Random numbers are ubiquitous in today's society. Unpredictable randomness is necessary for all cryptographic algorithms used for data protection. Security depends on the unpredictability. Millions of terabytes of encrypted data are transmitted and/or stored every day. numbers Random Number Generators (RNGs) can be found in almost all computer systems and are implemented in software or hardware. An encryption system is only secure if its RNG is secure.

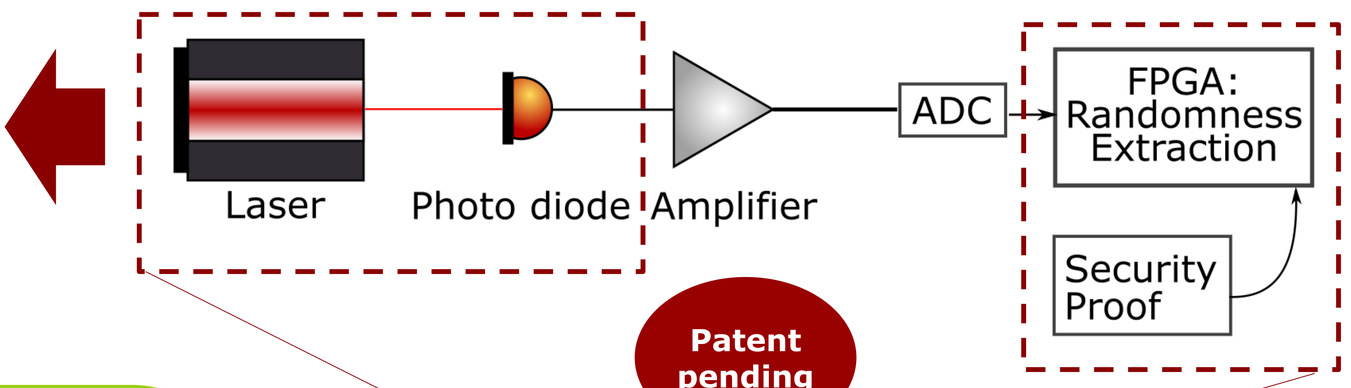
Existing RNGs are far from perfect

- Software RNGs produce so called pseudo random numbers based on an algorithm, i.e. they are predictable
- Classical hardware RNGs are in principle deterministic, thus inherently unsecure
- As many services have now moved to the cloud, encryption is needed to secure privacy. Today's RNGs are not enough to protect this much information
- The number of cyber attacks is increasing every year, in part due to imperfect devices, thus further increasing the need for strong encryption
- Situation gets worse with emergence of **quantum computers**

Mathematically proven security and ultra-high speed

Robust optics

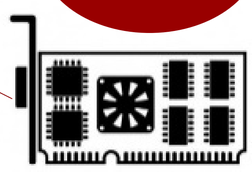
Patent pending design based on simple and robust optics – with full mathematical security proof



Powerful electronics

High bandwidth electronics and powerful FPGA enable unprecedented post-processing capability while maintaining information-theoretic security.

Patent pending



Standard PCIe or USB form factor

SECURITY

- Device certifiable by the most stringent standards such as AIS 31 by German BSI
- Information-theoretically secure post-processing
- Real-time entropy testing and instant failure detection
- Guaranteed failure probability of **less than 10^{-10}** in 10 years of constant operation

Applications

- High-volume applications where large pools of random numbers are needed as a resource, e.g terabit switched in data centers
- Security-critical defense applications such as one-time pad encryption
- Commercial quantum key distribution systems

SPEED

- The entropy source is a vacuum state of light probed by a high-bandwidth photodetector
- All components optimized for high speed operations
- World record speed of 8Gb/s real-time post-processed output demonstrated

Technology Description

- Quantum random number generator (QRNG) is a device that is employing quantum mechanics to produce random numbers. By the laws of physics this is the only way to produce true unpredictable randomness
- Our device probes a vacuum state of the electromagnetic field. This has several advantages: this is easily prepared state, relatively simple to model and enables fast bitrate operation
- Powerful electronics and FPGA chip address the bottleneck of post-processing
- The end result is a fast and secure device that fulfils the needs for both current and future telecommunication and IT security applications

Intellectual Property Rights

The patent was filed by Tobias Gehring and Ulrik Andersen with DTU being the owner.

Team

Postdoc
Dino Solar Nikolic

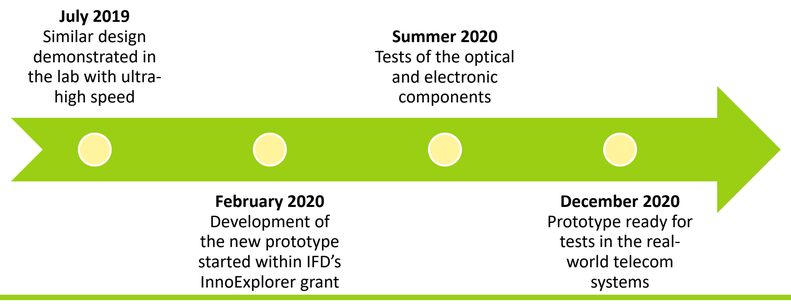
Assistant Professor
Tobias Gehring

Professor
Ulrik Andersen

CEO Viercon
Peter Viereck

Current State

Currently, the optical and electronic components are being tested for optimal performance of the future prototype.



Business opportunity and Call to action

Before the end of the InnoExplorer grant (February 2021) a business plan will be developed for the future spin-out.
At the moment we are primarily looking for industrial partners and first customers that will test our device and give us necessary feedback in order to optimize the performance of the device.

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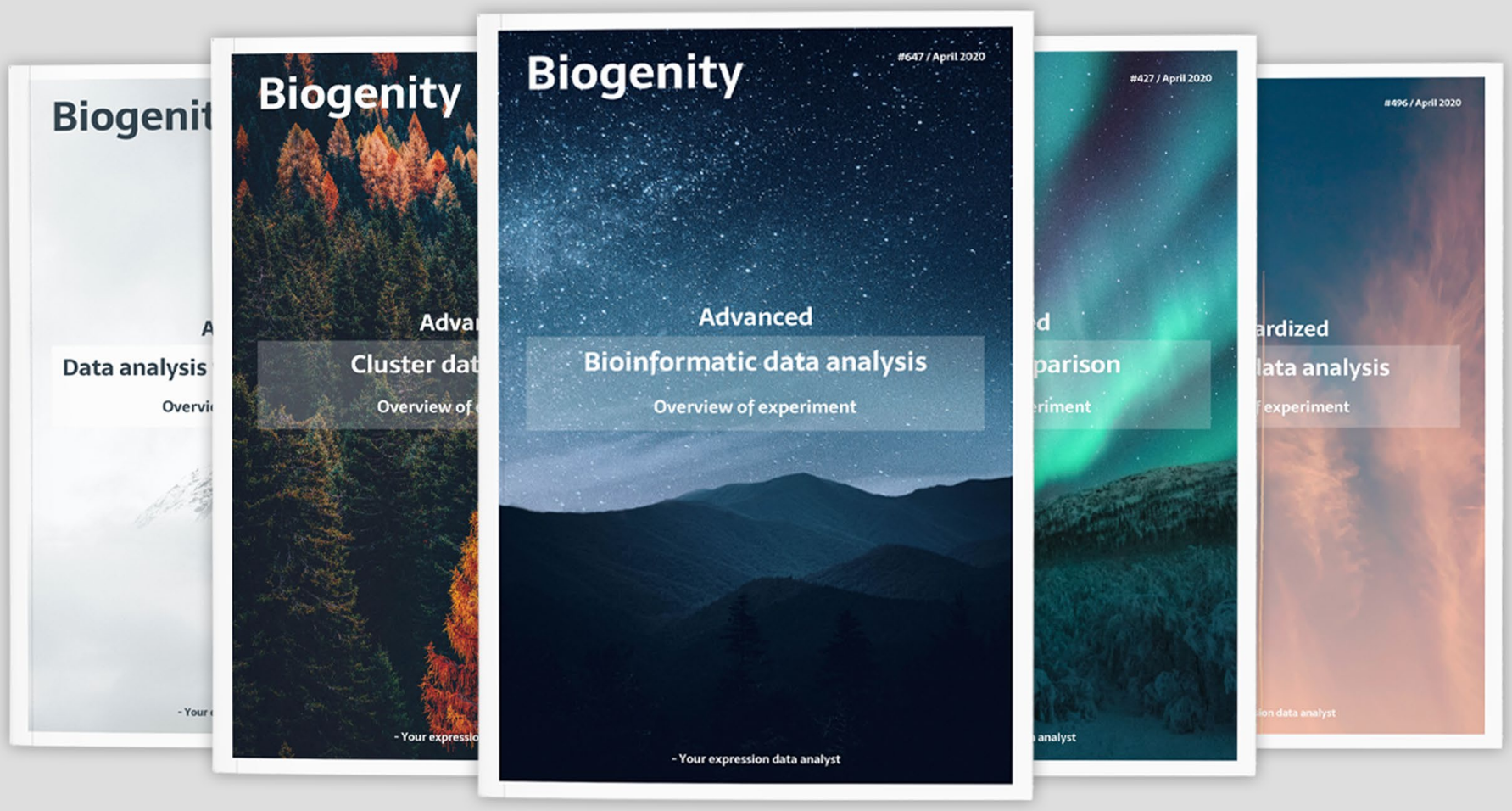
Biogenity™

Digitalization, AI & Robotics

| Statistical evidence | Fast Delivery | Thorough description | Easy implementation |

You expression data analyst



NEW SERVICE!

Proteomics Analysis (LC-MS/MS)
from €70 per sample

Five types of expression data analysis.
No software. Simply great service.

At Biogenity, we are experts in analyzing gene and protein expressions. By using advanced Machine Learning and statistics we can deliver a premium analysis of expression data, which includes a clear overview of methodology and findings, bioinformatics, figures, and tables - all focused on generating the best possible overview of your data.

Visualize your research: We have designed our analyses to provide you with the best tools to interpret and understand your expression data. Each of our analytical products gives you the right arguments for your further research.

Fast delivery: We excel at having short delivery times, without compromising on quality or price. For urgent tasks, there is the opportunity of prioritization and quicker delivery.

Customize to your needs: You have the opportunity to tailor your solution. By default, all of our advanced data analyzes include statistical analysis and bioinformatics.

Today's representatives

PhD
Kenneth Kastaniegaard
Co-Founder & CEO

MSc
Louis Loeb
Co-Founder & CCO

Contact information

Website: https://biogenity.com
Email: info@biogenity.com
Phone: (+45) 71116050

linkedin.com/company/biogenity
twitter.com/biogenity
facebook.com/biogenity

Current State

Biogenity's expression data analyzes are already on the market, and today we serve customers such as Lundbeck, Statens Serum Institut, Aarhus University, and others.

The latest initiative is a strong collaboration with DTU, where we offer a state-of-the-art Proteomics Core Facility for both commercial customers and academia. Prices start from only €70 per sample.

Call to action

Somewhere, something incredible is waiting to be discovered; get a detailed overview of your data – order your expression data analysis today.

Visit us at Biogenity.com or give us a direct call on (+45) 71116050.

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BioX

Empower people

Digitalization, AI & Robotics

The BioX Sensorband

Our mission is to develop new generation of sensing devices for facilitate human-robot (human-machine) interaction and to develop a new generation of comfortable wearables.

VR and gaming

Industrial and mobile robots

Exoskeleton and assistive robots

Collaborative robots

Motion data collection

Engineering and construction vehicles

Bimodality with FSR and IMU – Wireless Communication – Rechargable battery – Comfortable – Easy to use

Technology Description

The BioX sensorband is an advanced sensing technology to detect human limb motion. The technology, based on knowledge of bio-mechanics, robotics, and machine learning, is able to detect arm motion, strength, and gestures accurately and conveniently.
The sensor technology was first invented by AAU in the EU AAL AXO-SUIT project of AAL Joint Programme and further developed with support by Innovation Funds Denmark.

The sensor band can be used for many applications, for example:

- Exoskeleton control
- General human-machine/robot interface
- Research and education platform, among others.

Intellectual Property Rights

A patent has been filed by and granted to Aalborg University and licensed to BioX ApS:
WO/2018/050191 "A new human intention detection sensor for arm motion assistance"

The Team

Contact Information

Web: www.bioxgroup.dk/
Email: biox@bioxgroup.dk
Scan the QR code and read more about BioX

Current State

July 2020: Developers Edition, available on webshop (TRL 8)

2020 - Fall 2021: Focus on the industrial market.
2021 - Spring 2022: Focus on health (fitness, rehabilitation): product ready Fall 2022
2022 - … : Use in exoskeletons

Business opportunity and Call to action

BioX provides products and solutions in human-robot interaction and exoskeleton technology development. You are very welcome to contact us!

Contact:

BioX: Professor, Co. Founder Ole Madsen, +45 21359465 - om@bioxgoup.dk
Marketing Manager, Lisbet Krogh - lik@bioxgroup.dk

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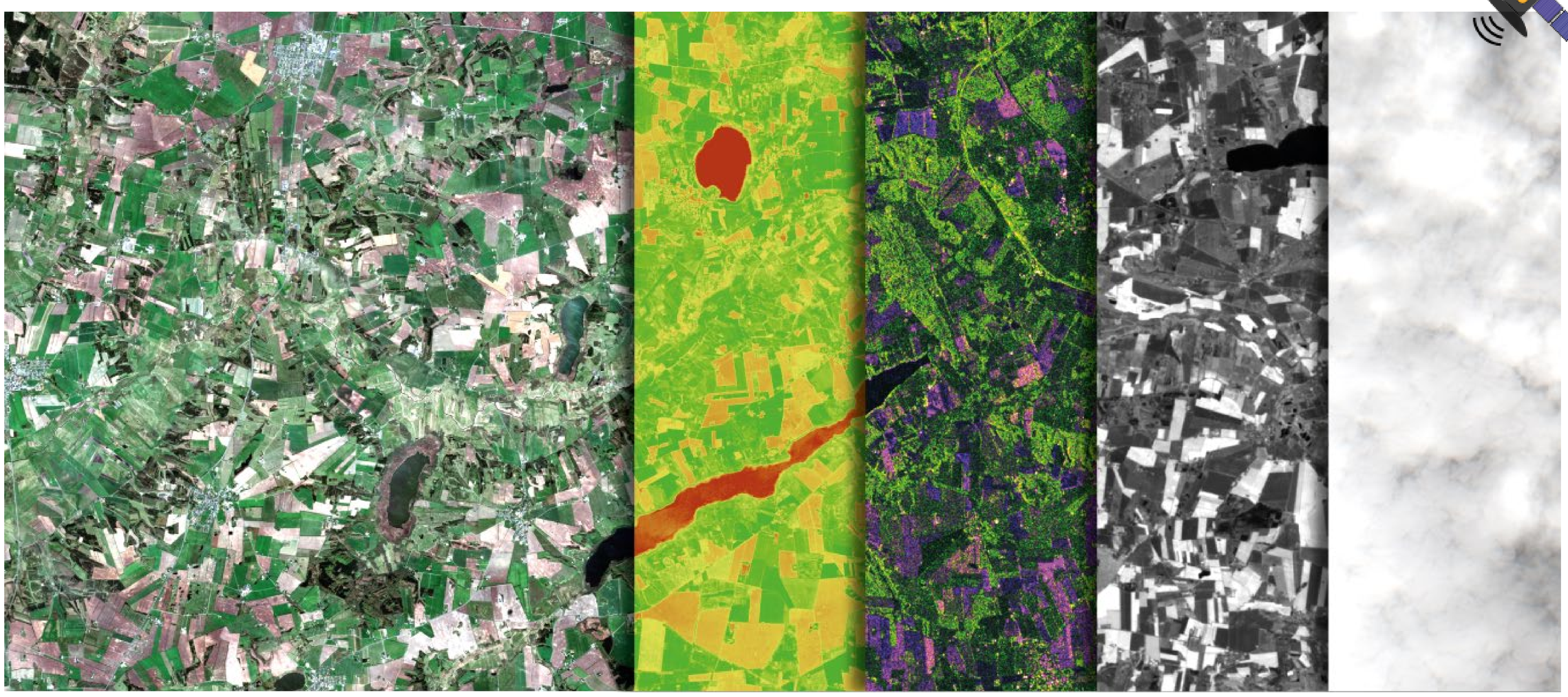
ClearSKY Imagery

Digitalization, AI & Robotics

Cloudless Imagery | **High Precision** | **Strong Reliability**

Daily Satellite Imagery

Without Clouds and Shadows



Technology Description

Satellite imagery has numerous use cases in the fields of environmental monitoring, map making and meteorology. For many of these use cases both clouds and shadows are an issue, as they hinder the visibility of the landscape. This problem is especially big in the northern hemisphere, where the weather is cloudy more often than not. In many cases this results in weeks or months between new cloud-free images of any given location.

At ClearSky Imagery we solve this problem by using radar technology and artificial intelligence to remove clouds, shadows and other inconsistencies from satellite images and recreate the underlying landscape. We recreate all relevant bands from the European Space Agency's Sentinel-2 satellites, which are used in many industries.

Intellectual Property Rights

We have no patents or other protected intellectual property due to the nature of our service.

The Team

Co-founder & CEO
Morten Fjord Pedersen

Co-founder & CTO
Malthe Dahl Jensen

Contact Information

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Email: mfp@clearskyimagery.dk

Current State

Our stage of development is prototyping. We have already developed our prototype cloud remover, automatic data pipelines, cloud and shadow detection, and are currently finishing our API data access. We are a few months away from being able to produce and deliver our cloudless imagery to stakeholders and other interested parties. ClearSky is currently focusing on daily cloudless multi-spectral satellite imagery of Denmark and will soon be expanding to Europe. We are currently funded by Innovation Fund Denmark.

Business opportunity and Call to action

We are creating a subscription-based company to provide up-to-date imagery without clouds on a daily-basis. We are currently looking for commercial/industrial partners in agriculture, forestry and urban monitoring, to validate our cloudless images through testing.

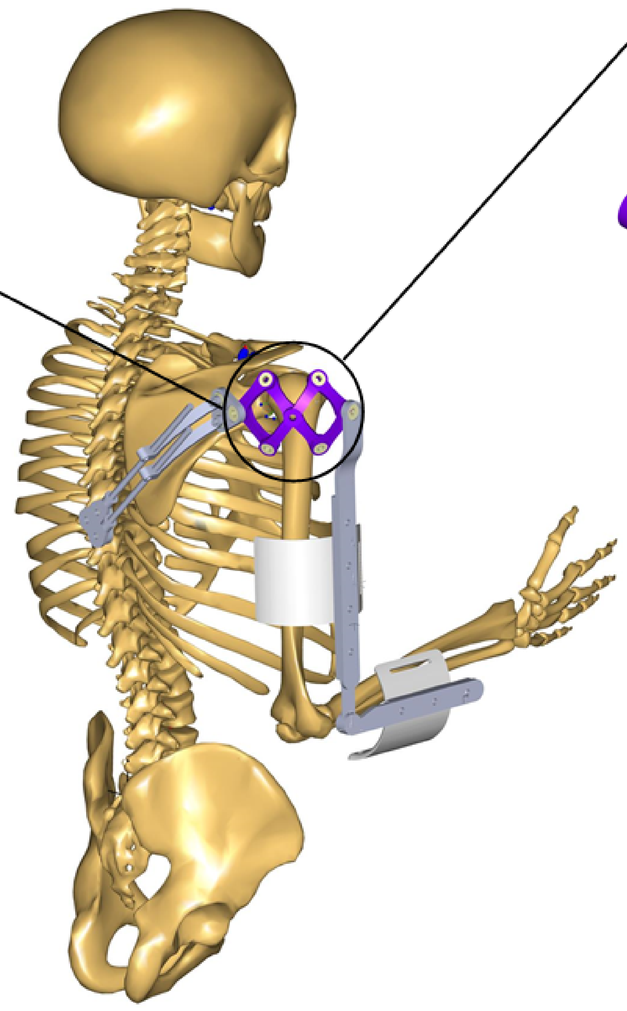
CXD – Compact X-scissors Device

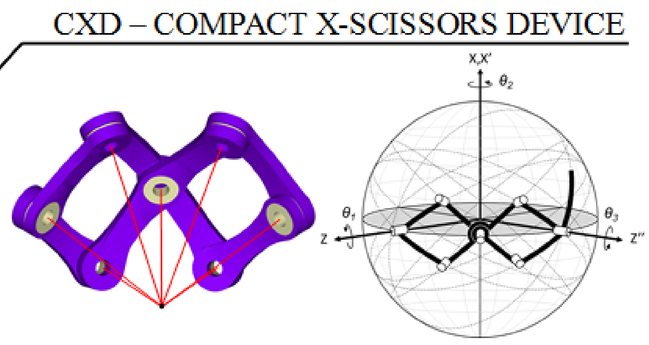
Digitalization, AI & Robotics

Value proposition

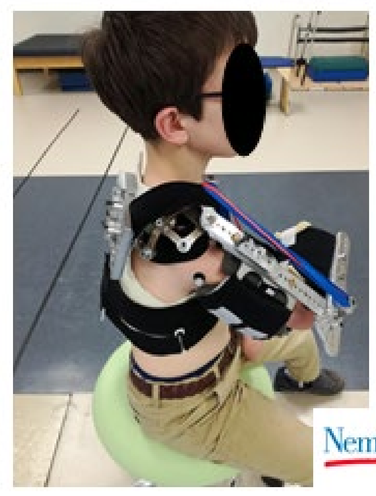
- An award-winning device for shoulder applications such as exoskeletons
- High robustness to design a compact and scalable mechanical joint capable to fit anyone
- High degree of control and precision with full range of motion, with three degrees of freedom

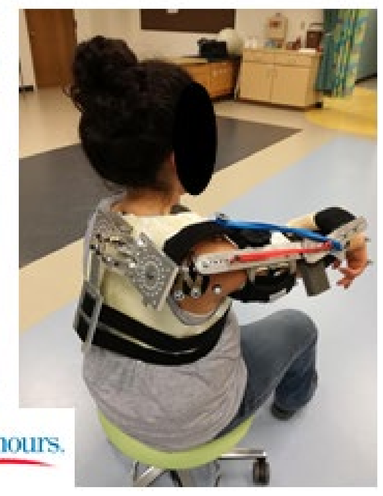
Compact X-scissors Device





- 3-degree-of-freedom spherical joint (no singularity)
- All joint axes meet in a common center of rotation
- Full compatibility with the human shoulder joint
- High kinematic performance and structural stiffness
- Most compact component of its kind
- Currently, the device is body-powered only





Exoskeletons can help and assistance for private use and support and relief when used in a workspace. But most patients or many professionals reject using these devices because they are either bulky, heavy or do not properly match the shoulder complex motion thus causing discomfort. A **compact solution** that can fit and hide underneath clothing may drastically **improve the acceptance** of these devices and make them wearable.

Technology Description

The CXD (short for Compact X-scissors Device) is a spherical scissors mechanism capable of three rotations, thereby mimicking the behaviour of a spherical joint. The mechanism moves on an imaginary sphere with a constant rotation centre and an arbitrary radius determined by the design parameters. Since there is a void space within the mechanism, it is suitable for applications where the mechanical parts surround a given object or workspace. The mechanism is particularly well suited to support anatomical, spherical joints such as the shoulder and the hip, thereby solving a problem that has been haunting the fields of orthotics and exoskeletons for decades

Intellectual Property Rights

Two patent applications filed on October 17th, 2017 and on April 24th, 2019 regarding the mechanism and its control means are owned by Aalborg University and are intended to be licensed to the spinout company "Compact X-scissors Device A/S" under an exclusive licensing agreement.

The Inventors

Miguel N. Castro
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Aalborg University

John Rasmussen
(Professor)
Aalborg University

Michael S. Andersen
(Assoc. Professor)
Aalborg University

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Current State

Proof-of-concept prototype made of aluminum and steel has been tested successfully as a highly compact shoulder joint in an upper body exoskeleton configuration.

Watch the invention here: bit.ly/3a65ovi

Call to action

In order to bring this and new products to market, we are seeking for:

- Experienced and skilled people willing to join the team to start the spinout
- Funding and/or Investors
- Licensee
- Partners and/or Research Collaboration

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RiACT

Digitalization, AI & Robotics

Modular Software for Agile Robots

Skill based configuration of robots

WHY RiACT

robotics, high-tech, software, agile robot production, smart factory, industry 4.0.

Complexity made simple - The power of change in your hands

SYSTEM ABILITIES

UNIVERSAL
Any robot can be programmed the same way

ADAPTIVE
Robots can perform tasks on parts that are not in predefined locations

MODULAR
Code can be reused and shared as robotic skills

INTUITIVE
Programming by plug and play and live demonstration

AGILE
Setup time and robot programming is minimized when a new task or product is introduced

INTELLIGENT
Robots automatically adapts to changes in the environment

MARKET

The Robotic Market

is one of the fastest growing industries in the world

€50 billion EUR
Global robotics turnover 2019

+37%
Annual growth rate

2 million
Manufacturing SME's in Europe

TEAM

CEO
Bjarne Grossmann
Software engineering and robotic vision

CTO
Francesco Rovida
Robot control and cyber-physical systems

CCO
Magnus Philip Ritzau
Finance and sales

COO
Volker Krueger
Operations and business development

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