

×



quantum **SPARK**







0







нушпон Spark #4 Graduation Pitch

. 0



Who are we?

Enabling the use of lasers by a MEMS based laser scanning solutions









Utilizing laser projection for Automotive Applications is becoming common



Enable High Profile Communication with Passengers and other Users



Lasers for Dynamic Ground Projection

- Always in focus
- Small Size
- Good Heat Dissipation
- High Brightness
- Colorful
- Easy to communicate
- Highly Reliable
- Modest Cost



Enable High Profile Communication with Passengers and other Users





Lasers for Dynamic Ground Projection

- Always in focus
- Small Size
- Good Heat Dissipation
- High Brightness
- Colorful
- Easy to communicate
- Highly Reliable
- Modest Cost



Enable High Profile Communication with Passengers and other Users



Maradin Ltd 2022 | Non Confidential





Lab and Field Tests Criteria



Copy *	Calibri • 16 • A		Wrap Text General	→ F	Normal Bad	Good ck Cell Explanatory
؇ Format Painter			∃ Merge & Center · s · 20 2	Formatting *	Table *	
Clipboard	G Font	Alignment	5 Numb	er G		Styles
• i	X V fx Scenario ID					
A	В	С	D	E	F	G
cenario ID	Light conditions	Projector location	Projection content	Surface	Surface Condition	**Rain (heavy)
RED01				Asphalt	Dry	no
RED02	-			Asphalt	Wet	no
RED03				Asphalt	Wet	yes
RED04	***Early Dusk			*Snow	Dry	no
RED05	-			*Snow	Wet	no
RED06	-			Gravel	Dry	no
RED07		Gra	Gravel	Wet	no	
RDK01				Asphalt	Dry	no
RDK02	-			Asphalt	Wet	no
RDK03				Asphalt	Wet	yes
RDK04	Dusk			*Snow	Dry	no
RDK05		De character (0, 2m)	C	Snow	wet	no
RDK00	-	Rocker panel (0.2m) Carpet anii	Carpet animation	Gravel	Dry	no
RNT01				Asphalt	Dov	10
RNT02	1			Asphalt	Wet	no
RNT02	-			Asphalt	Wet	Ves
RNT04	Night			*Snow	Drv	no
RNT05				*Snow	Wet	no
RNT06	1			Gravel	Dry	no
RNT07	1			Gravel	Wet	no
RNS01	Night - Under Street light			Asphalt	Dry	no
RID01	CONTRACTOR AND A DESCRIPTION OF			Bright Ceramic tiles	Dry	no
RID02	Indoors (Parking garage)			Bright Epoxy coating	Dry	no
RID03				Asphalt	Dry	no
HED01				Asphalt	Dry	no
HED02				Asphalt	Wet	no
HED03				Asphalt	Wet	yes
HED04	***Early Dusk			*Snow	Dry	no
HED05				*Snow	Wet	no
HED06				Gravel	Dry	no

КРІ	Measuring Procedure	Expected value
MTF (Modulation Transfer Function)	$\begin{array}{c} \bullet (d) dd $	MTF 1 lp/°=0.85
Brightness	Measuring the laser power and calculating the image brightness (knowing the image size)	Vertical configuration: Max 365 lux ± 10 lux Min 2.4 lux ± 1 lux Horizontal configuration: MAX 200 lux ± 10 lux Min 1.1 lux ± 0.5 lux



Maradin Ltd 2022 | Non Confidential

HMETC/Quantum/Maradin Collaboration





!Thank You

.Maradin Ltd
P.O. Box 56 Yokneam Industrial Park, South Yokneam
20692, Israel
Tel. +972 (4) 627 3653 | Fax. +972 (4) 959 0327

www.maradin.co.il











Earliest warning battery hazard detection and prevention software **ALGO**

Sprk4 PoC Safe loading of EVs

Lithium battery Maritime platforms







140M EVs by 2030 powered by lithium batteries



Lithium batteries explode loss of billions \$, injuries, even deaths no early detection or prevention was available...

Until Now!

EV Model	Recalled EV due to Fires	Recall Loss 2021	Number of fires reported	Frequency of fires in vehicle fleet	Cost per Recall Vehicle
China, 7.8M EVs total			640, Q1 2022	1 in 3,000	
Chevy Bolt	142,000	\$1.8 billion	14	1 in 10,043	\$12,676
Hyundai Kona	82,000	\$900 million	15	1 in 5,467	\$10,976

Existing procedures treat fires, but can't prevent them



On March 2022, the Felicity Ace drowned of the coast of Portugal after burning for 2 weeks at sea due to a Lithium Ion Battery fire. Conventional methods were not able to put the fire out. Over 4,000 cars went down among them 1,000 Porsches & 200 Bentleys.





Introducing AlgoShield

predicting and preventing battery fires Software using quantitative algorithms

Detects precursors of faults while cell is still safe, days instead of seconds before a fire

Fast, accurate, available now







Commercial target: AlgoShield HAS TO BE to be embedded into the BMS of each EV.
To encourage OEMs to do this, work with insurance companies to offer lower insurance premiums to those companies that use our solution, also logistic companies that will decrease the price of shipping

•Alert levels:

- Green (load the EV on the ship), Red do not load, apply preventive measures
- Red alert will turn on hazard lights to signal EV cannot be loaded

Use the Kia Quantum Hub Test Car in Yavne

ALGOLION®



Fast, Reliable Determination of State-of-Risk (SoR) of EV Battery



Risk detection: No Fault Found Fault Found

Port car lot

Boarding test

Control

Green Pass for loading

AlgoShield: how it works

Input: tracks dc current & voltage to detect precursors of defects in safe state.

Output: Proprietary equations calculate and analyze five output parameters that are well or related to developing faults.

Alert: The system alerts you when a safety fault is found so that you can protect your product and avoid damage.





ALGOLION: Leading Commercial Engagements



חברת החשמל

Israel Electric







Energy Solution – Hyundai Motor Group TECH

A

HYUNDAI



Israel Ministry of Defense



Monitoring 9 new ESS Sites

EASA

aviation



Monitoring Pilot for new ESS Sites



Monitoring Pilot for new ESS Sites



Full BMS integration by October 2023 For EV models



Diagnostics Services & **R&D** Projects

Battery & ESS Pilots





SAE International

G-27 Committee, writing AS-6413 standard



FDA

Approved project for implantable device battery safety

ALGOLION[®]

Funded project, recognized as a mitigating measure for



Boeing funded PoC and recommended us



European Commission, the Israeli government

funded projects Everlasting (Siemens, VDL), Albatross (Daimler, Ford, Fiat), SafeCell



TUV Sud (Germany) & Impact Solutions (UK)

demonstrated early warning



Safer Shipments:

Pre-board

&

On-board inspection

for fault batteries

For a safer ride!!!





PoC: Ron Goldner – Director of Sales & Business Development |M: +972-50-379-5255 | Ron@algolion.com | Rehovot, Israelwww.algolion.comin



×



quantum **SPARK**





0











Turning the sun's rays into a cooling force

Solcold introduces an innovative material which creates a cooling effect produced by the sun's rays







The Challenge of Cooling

27



Our globe is warming



Air-Conditione rs **are inefficient and polluting** There is a need for efficient cooling technologies

Illustration of the product





600mm width, 0.35mm thick rolls

Third layer – **Active cooling IR**

4th

Fourth layer – **Reflective layer**

- 3 Granted patent
- 3 Pending patents
- 2 Provisional patents

Cooling comparison



8 Celsious Degrees above/below ambient 6 4 2 0 Reflective RadiCool Ambient SolCold SolCold White -2 (shed) white ColdBox paint -4 paint -6 -8

Comparison of cooling coatings

Cars Live-test results

Thermal Camera Display





Simple Canon PowerShot Camera

Field Microbolometer Gobi640 Thermal Camera Temperature

Cars Graph- One day

Experiment date: September 2021. Air temperature: 32°C. Humidity: 65%

Reference Car SolCold Environment



Comm Cabinets Live-test results

Thermal Camera Display



Simple Canon PowerShot Camera



Field Microbolometer Gobi640 Thermal Camera

Box Graph-1 Days

Experiment date: September 2021. Air temperature: 31°C. Humidity: 65%

Reference Box SolCold Environment





Applying SolCold coating on roof of bus.



SolCold coating on roof of bus.

Initial results on Buses

Pilot

- 2 similar buses compared:
 - 1 bus: roof coated Solcold.
 - 1 bus: roof uncoated.
- Both buses operational with fully powered AC.
- Both buses were full of passengers and driving in the center of Israel.

Results

- Reference bus failed to withstand Israel's heat reaching up to 40 degrees Celsius.
- SolCold bus did not exceed 32 degrees Celsius.
- Average temperatures during the day were 35 degrees for uncoated bus and 24 degrees for SolCold bus in the passenger location.



Graph compares temperature inside a SolCold bus and an uncoated bus for 6 days (June 26 – July 1 2022)

Paid running Pilots

2022 forecast revenues \$1,050,000

Telecommunication & Defense (Outdoor electronic boxes)	Heavy Industries	Automotive
Japanese Communication Company - 1 st pilot successfully finished.	ICL - First phase signed, waiting for next phases	Volkswagen - 1 st pilot successfully finished, 2 nd pilot in process
Airspan - Paid pilot starting in July.	IEC - Israel Electricity Company - Paid pilot running	Hyundai – Paid pilot starting in September
Innoviz - Paid pilot starting in July.	Alum Eshet - Close to signing	Tata - Close to signing
Prime minister - 1st pilot successfully finished.	SIIRD - Singapore Israel bilateral program Paid & running	IPS (buses) - Paid pilot running
IDF - Paid pilot running.		Ab InBev - Paid pilot starting in September
Elta - Paid pilot starting in August		
Elbit Systems - Paid pilot starting in July.		
Municipality - Tel Aviv - Paid pilot starting in September		
Total \$35K	Total \$815K	Total \$200K

Hyundai Project - 1 Year

Performance Evaluation in Israel:

This phase evaluates the performance of the coating in various combinations in order to understand the overall performance envelop in static mode.

No	Covering Combination	Roof interior line	Season
1	1	With	Summer
2	1+2	With	Summer
3	1+2+3	With	Summer
4	1+2+3	Without	Summer
5	1+2+3	Without	Winter
6	1+2+3	With	Winter



Hyundai Project – 1 Year

Additional Performance Evaluations:



1. Cars in Detroit – Winter and Summer



2. Kia Carnival Minivan Coating - Israel



3. Kia Niro EV Coating - Israel

4. Use case test

The purpose of this experiment is to evaluate the performance in a real use case scenario. We will monitor and record the **power consumption** as well as **temperature** while driving the car.

Automotive Grade JDA is planned with Akzo Nobel

SolCold and Akzo Nobel signed a LOI for conducting joint JDA. Negotiations for developing automotive-grade coatings based on SolCold technology with AkzoNobel coating. The project is planned to progress from July to November 2022.



Akzo Nobel NV is a paints and coatings company based in the Netherlands and operates internationally. Their paints and coatings are vehicles, buildings, and facilities.

- REVENUE IN EUR (TTM) 9.85bn
- INCORPORATED 1969
- EMPLOYEES 32.9k
A-Team

R&D Focus – Leading combination of **Chemistry**, **Physics & Materials**



Eng. Yaron Shenhav Founder & CEO 15 years Multidisciplinary R&D and Management





Nitzan

Maman PhD

Lead Physics

Researcher



manageme **"Kristina Trahtman MSc** Chemistr

Research

V



Maayan Fox



Chemistry Researcher **Stav Shviger** ME

Thermodynamic Engineer

Noam Ralbag

Lead Chemist

Evgeni Tcynbal

PhD

MSc

Board members



Mr. Eyal Agmoni, Founder and President of Chartered Group VC



Mrs. Sarit Zeevi Investor, Advisor, Attorney in USA & Israel







Guy Ron PhD Professor of Physics. The Hebrew University



Eran Zahavy PhD CTO at the Biological institute

Bottom Line

1

One of a kind 'Cooling by Sunlight' technology– Potential free-of-charge cooling power of over 110W/m²



Team of experienced aces – Combination of Israel's finest researchers



Huge market opportunities ahead – Which allows us to do both self production & Partner with giants – Rapid expending



Global impact with reducing CO2 emissions-Coated objects will consume far less energy and eliminate peak consumption during summertime



ANOVATION & ENTREPRENEURSHIL INTERNATIONAL MPETITION

1st prize winner of: Shenzhen, Pioneers19!, Tel Aviv challenge, AkzoNobel



















(Formerly Multi B.T.)

September 2022



⁽¹⁾ An old Russian proverb, made internationally known by Ronald Reagan

Our Mission

To provide the ultimate protection for people, assets and data, using innovative voice-based biometric authentication

Our Vision

□ To be the most trusted name in authentication





LEADERSHIP TEAM



Eddie Nevoani, Co-Founder & CEO

- B.Sc. Computer Sciences (Haifa U.)
- Experienced in hi-tech management
- Experienced in software development
- Technion For Life (TFL) 2012 winner as CTO (IntegRTV)



in

Ofer Atzmon, Co-Founder & VP Biz Dev

- B.Sc. Electronics Engineering (TAU)
- Highly experienced in international business development
- Experienced in telecom, healthcare, smart mobility and IoT industries
- Hands-on marketing & sales of hi-tech solutions



Erez Kedem, CTO

- B.Sc. Electronics Engineering (TAU)
- Highly experienced technology leader
- Vast knowledge of signal processing, voice analysis, machine learning, deep learning, natural language processing



lin



Lihu Berman, Scientific Advisor

- B.Sc. (Summa Cum Laude) and M.Sc. (Cum Laude), both in Electrical Engineering (Technion)
- Founder and managing partner at Tensor Group
- Multidisciplinary professional, with vast expertise in research, algorithms, signal processing and ML/DL
- Problem-solver, innovator, learner, out-of-the-box thinker

THE SOLUTION

The **X-Factor** of multi-factor authentication

- Voice-based authentication
- Beyond multi-factor
- Emotional and physiological identification
- Strong fraud detection
- On-device or cloud based
- Compatible with future passwordless standards



MAIN DIFFERENTIATORS



Natural &

intuitive



Contactless



Works online

and offline



Error < 0.1%

(and improving)



Highly affordable



No dedicated hardware



Immune to hoarse throats & coughing



Detects physiological and emotional states



Zero-trust architecture, Wo zero-knowledge proof, env continuous authentication

Works in noisy environments

Can't be stollen, altered or forged

MARKETS AND USE CASES



* - Use case currently being evaluated

COMPETITION & POSITIONING



ROADMAP



STATUS

- Raised Total \$0.5 million
- Participated in



- Technology demonstrator exceeding 99.5% accuracy (best in class)
- Advanced research on emotion detection (fatigue/drunkenness)
- Developing POCs with several key partners

PLANNED POCs



A Unicorn with over I,600 employees

Using voice authentication for employees sign up and authentication.



A global auto maker

Using voice authentication as part of driver experience. Identifying owner/driver/passenger.

THANK YOU

Eddie Nevoani

CEO eddie@multibt.com +972-52-3473028

Ofer Atzmon VP Biz Dev

ofer@multibt.com +972-52-2451771







H

HYUNDAI

BAZAN GROUP





OUR MISSION

BRINGING THE AUTONOMOUS FACTORIES OF THE FUTURE

FOREVER CLOSER TO ZERO MANUFACTURING DEFECTS

© SKILLREAL | WWW.SKILLREAL.COM



THE INSPECTION CHALLENGE

Disrupted Industries that are investing trillions in automation can not be supported by current inspection technologies

53

ENHANCING STANDARD CAMERAS FOR ACCURATE INSPECTION

Current Technology:

large foot-print inspection cells limiting the Inspection to few manufacturing stages



SkillReal Technology:

Small cameras are enhanced by our technology to enable scalable accurate inspection of all manufactured parts





OUR disruptive AI-R TECHNOLOGY

Patented



X10 ACCURACY

Enabling for the first time to use standard small cameras for accurate inspection at scale



WHY NOW?





THE AUTOMOTIVE INSPECTION MARKET POTENTIAL

- > 1,000 automotive manufacturing lines
- X 200 manufacturing cells per line
- = 200,000 inspection stations
- X \$2,500 revenue per station per month





COMPETITION LANDSCAPE



TRACTION





Clip





GO TO MARKET STRATEGY

Initial focus on Automotive OEMs/ Tier-1s
"Land and expand"
Subscription pricing model with add-ons
Channels:

- OEMs via PLM companies (Siemens, Rockwell Automation,...)
- Line builders and Tier1s Direct / Resellers

THE TEAM



Shai Newman Founder & CEO



Andy Uri Lessner Customer Success



Sagiv Rosenstein VP Product



Nir Yaakobi VP Biz Dev



Yuvalal Liron

Head of Research & Algorithms



Eric Active Board Member Bernheim



Koby Lif Active Board Member





Weizmann Institute of Science



g<u>m</u>

McKinsey &Company







62 © SKILLREAL | WWW.SKILLREAL.COM

Use Cases



Use Case 1: Inspection of spots weld During Ramp Up

Visualize and measure all manufacturing features





Use Case 1 - cont. : Deviation measurement & correction



Correction vector in red



Robot Program Fix – using WP measurements





Use Case 2: Inspection During Serial Production



Misplaced welded bolt



Automatic inspection: accurate w/o re-training

Original Image







Q&A



END





FINANCIAL SUMMARY

million

\$4.0

Investments so far

\$2.5

14

55.01

million

Grants received

million

Sales target for 2025



6

BAZAN GROUP




Enhancing industrial productivity

Using machine vision, we improve business performance

and protect your workforce

www.armoursense.c

om

Downtime is The #1 Enemy of Productivity

Accidents cause a great deal of downtime

Over 30% of accidents caused by Human-Vehicle interaction 900B\$ Vehicle Accidents 2.68T\$ Inefficient use of the: workforce, Manufacturing equipment, and vehicles is a major cause of downtime



We'll help you reduce downtime

ArmourSense is a video analysis software solution (SAAS) that leverages your existing video cameras with AI capability

By leveraging them, we predict and reduce risks to people's safety and the improve efficiency of work

Target Audience

Industrial facilities - factories, logistic centers, warehouses, transportation centers



Ongoing Status Reports Real Time Alerts Downtime Prediction



Vehicles Prevent accidents between vehicles and between vehicles and

Restricted Areas Prevent access to prohibited areas

S ArmourSense



PPE

Monitor the use of Personal Protective Equipment

Robots

Ensure the safety of your workers when using robotic equipment



Assembly Line

Keeping your workers safe on the most intensive production



People Detect injuries on the work floor

Make better use of your resources

Ongoing Status Reports Real Time Alerts Downtime Prediction

Optimize vehicle utilization

- Reduce vehicle idle time
- Detect speed violations
- Optimize driving routs
- Reduce your carbon footprint and save fuel!

Boost productivity:

- Report idle time & working time
- Monitor finished product volume
- Alert on shortage of parts or materials
- Report incorrect machinery usage
- Recommend additional training if work is performed incorrectly.
- Increase employee satisfaction



Current Status









Location:

Maman facility in the Ben-Gurion airport. The check-in area of the imported goods facility.

Goal:

Test ArmourSense version 1.0

Hardwar



ArmourBox is connected to the camera streams via the facility network switch and a local IP address

Software

All data processing is performed On-Edge and On-Premise and not on the Cloud



Safer: Videos are not leaving the site Easter: Videos are analyzed in real





Pilot Plan - 4 Months

Month #1

Installing ArmourBox on site, running. machine vision models on data streams.

Month #2

Installing live video streams interface, displaying. heatmaps, risk levels, and accident probabilities .

Month #3

- Installing sirens in pilot area.
- Signaling a high risk of collision by activating sirens.
- Management dashboard: driving routs, speed, risk levels and near misses.
 Month #4
- Installing sirens on forklifts.
- Providing real time risk alerts to drivers.



VEHICLES BOARD (ILLUSTRATION)



35 Nomisses 30 25 20 15 10 5 0 Incidents probability 9% 10% 59% 23% Forklift A Forklift B Forklift C Forklift D

ArmourSense

Vehicles Near



Team



Sarit Tamir Co-founder & CEO

- Experienced management and business development executive
- Expertise in taking idea to execution



ArmourSense

Maoz Tamir Co-founder & CTO

- Hands-on AI consultant and architect - major focus on algorithms for image analysis
- 12+ years in deep learning, visual and signal analysis
- 30+ years in software development

Our BIG Vision – Enhancing Industrial Productivity

We strive to improve the efficiency of your organization's work by eliminating the main causes of productivity declines:

The first. Injuries and accidents Secondly, inefficient work patterns and idle machinery, vehicles, and workers.

As a result of the technology we develop, we are able to analyze the video streams from your cameras in real-time, and inform you about any threats to productivity.





Thank You For Your Time





×



quantum SPARK





0









Technology POC Summary Quantum-Hub Spark #4 Graduation

SEPTEMBER 2022





• • • • **TACTILE** • MOBILITY

TACTILE MOBILITY IS ENABLING THE NEXT GENERATION MOBILITY WITH THE "SENSE OF TOUCH".

Our in-ECU solution generates unique real-time data which enhances safety and performance, from existing in-vehicle sensors by software only

Our AI and signal processing driven data insights enable ground-breaking solutions for multiple industries, using global Tactile Maps

TACTILE MOBILITY – MODERNIZING MOBILITY TODAY, ENABLING MOBILITY OF THE FUTURE

Founded in 2012

Headquarters in Israel, presence in US, Germany, Singapore and Ukraine





OUR KEY SUCCESSES



Currently in production with BMW **180M**

Vehicle events recorded

29M+

KMs logged **36**

Advanced dev projects with 9 OEMs and Tier-1s

BMW STARTUP GARAGE ABOUT TACTILE MOBILITY



IN-VEHICLE IN-ECU EMBEDDED SW ALONGSIDE A CROWDSOURCING CLOUD SYSTEM



 Algorithms are based on raw data from sensors which already exist in the vehicle (e.g. wheel speed, torque, yaw rate...)

• Tactile Processor in deployed in one of the ECUs, typically a chassis ECU

 Tactile Processor uses advanced signal processing, energy equations, & machine learning

TACTILE MOBILITY'S ROAD SENSING PORTFOLIO BASED ON THE TACTILE PROCESSOR TECHNOLOGY



CONFIDENTIAL DRAFT MATERIALS ⁽¹⁾ A Product comprised of multiple Virtual Sensors ⁽²⁾ CoG – Center of Gravity

TACTILE MOBILITY'S ROAD SENSING PORTFOLIO SELECTED FOR POC WITH HYUNDAI MOTOR COMPANY



CONFIDENTIAL DRAFT MATERIALS ⁽¹⁾ A Product comprised of multiple Virtual Sensors ⁽²⁾ CoG – Center of Gravity

TESTED USE CASESGRIP ESTIMATION

POTENTIAL USE CASE

High accuracy and availability of friction estimation (especially while cruising) can be used to pre-condition the usage of different in-vehicle customer functions:

- Adaptive Cruise Control
- ABS
- etc.

KPIs in POC

Showcase near real-time identification of the Mu (Friction coefficient) change:

- From High Mu
 Mid Mu
 when cruising over 55[kph]
 on dry asphalt onto gravel
- From Mid Mu
 High Mu when cruising over 55[kph] on gravel onto dry asphalt

BENEFITS

Unlike existing technologies, Tactile Mobility provides grip estimations for all 4 wheels while cruising without the need for excitations (accelerating or braking) in sub second availability and high accuracy



TESTED USE CASESTIRE-WEAR INDICATION

POTENTIAL USE CASE

Provide an indication of the Tire-wear status for each of the Tires. This indication can be displayed to the driver to alert on the need to change the Tire.

KPIs in POC

Since Tire-wear is a gradual process that requires significant time, we will change a single tire to a worn tire (same make and model tire) and show how the system identifies the change and provides the delta in tread-depth between the tires

BENEFITS

Software only Tire-wear indication. Does not require any additional H/W sensors



TESTED USE CASESWEIGHT ESTIMATION

POTENTIAL USE CASE

Provide an estimation of the actual weight of the vehicle while driving, can help prevent overload situations

KPIs in POC

Identify the vehicle weight in an accuracy of +/- 80[kg]

BENEFITS

Software only solution, does not require any additional H/W sensors



Thank You For Your Attention

Contact Details

ldo Tsalka VP Business Development

Email: ido.tsalka@tactilemobility.com Mobile: +972 54 771-9128