

ICCQS

Q3 & Q4/2023 ICCAS NEWSLETTER



Dear Reader,

we are pleased to present you the latest newsletter of ICCAS for Q3 /Q4 2023.

Various conferences, events, and presentations attended are briefly presented, as are new publications and personnel achievements. We hope you enjoy and find interesting information.

Andreas Melzer & Thomas Neumuth

#TECHNOLOGIES_AND_SCIENCE_PRESEN-TATION

- · ICCAS @ CSI FRANKFURT 2023
- · ICCAS @ ICCA STROKE 2023
- · <u>ICCAS @ AIRMM 2023</u>
- · ICCAS @ KH-IT-HERBSTTAGUNG
- · <u>ICCAS @ 57[™]BMT 2023</u>
- · ICCAS @ 7[™]LIFE SCIENCE FORUM IN SAXONY
- · ICCAS @ NATIONAL CENCER CANTER IN KOREA
- · ICCAS @ 34TH ISMIT CONFERENCE
- · ICCAS @10TH ANNUAL EMSCO MEETING
- · ICCAS @ DKOU 2023
- ICCAS @ RAES-ESS INTERNATIONAL JOINT MEETING 2023
- ICCAS @ HACKATHON: FAIRification game for software
- · ICCAS @ MEDICA TECH FORUM 2023
- ICCAS @ FUTURESAX Sächsisches Transferforum

#MEDICAL_TECHNOLOGIES

- START OF THE NEW VOLTA PROJECT
- START OF THE NEW RescEU EMT PROJECT
- <u>3MP-FUS mid-term milestone conference</u>

#PUBLICATIONS

 <u>A Comparison between a maximum</u> <u>care university hospital and an outpa-</u> <u>tient clinic - potential for optimization in</u> <u>arthroscopic workflows?</u>

#MISCELLANEOUS_FROM_ICCAS

- Andreas Melzer's team won this year's Hamlyn Surgical Robot Challenge 2023
- <u>Thomas Neumuth Appointed</u> <u>member of WHO Working group on</u> <u>Knowledge and Information Ma-</u> <u>nagement of Emergency Medical</u> (EMT)
- Winner of the Best Applications <u>Paper Prize at the IFAC World Con-</u> <u>gress</u>
- MDR-Jump Interview on the topic: "Artifcial intelligence in cancer re-<u>search</u>
- <u>Start of the new winter semester</u> 2023/24
- ICCAS end-of-year meeting

#TECHNOLOGIES_AND_SCIENCE_PRESENTATION

PRESENTATIONS AND CONFERENCES IN Q3 & Q4

Juni 28th – July 01st, 2023 - Frankfurt ICCAS @ CSI Frankfurt 2023

From June 28th - July 01st 2023, the CSI Frankfurt took place at the Congress Center Messe in Frankfurt, which is dedicated to promoting development in the field of congenital structural heart disease worldwide. Numerous experts in the field are represented, including Andreas Melzer, who presented the topic: "MRI-guided vascular interventions: we're getting there".

June 30th – July 01st, 2023 - Frankfurt ICCAS @ ICCA Stroke 2023

At the same time, this year's ICCA Stroke 2023 also took place at the Congress Center Messe in Frankfurt from June 30th - July 01st 2023 and led through the various aspects of stroke treatment and stenting of the carotid artery within the two-day interdisciplinary and interactive course.

Experts in the field of stroke treatment gave numerous presentations, with live and recorded cases, debates and practical simulator workshops to provide the latest findings and treatment options on the subject.

For this reason, Andreas Melzer was invited to the congress to give a lecture on "MR-Guided Interventions" and take part in the discussion panel.

September 12th - 14th, 2023 - Palermo, Italien ICCAS @ AIRMM 2023

The AIRMM Congress took place for the 14th time in Palermo, Italy, from 12th- 14th September 2023, where the latest achievements and scientific findings on MR-guided therapy methods were presented and discussed.

Andreas Melzer was invited to give a lecture on "MR-guided robotic surgery: Where do we stand?". In addition, cooperation talks were held with the radiology department of the University of Leipzig for the field of MRgFUS neuroapplication.

September 20th – 21th, 2023 - Dresden ICCAS @ KH-IT-Herbsttagung

The KH-IT-Herbsttagung took place on 20th - 21th September 2023, at the University Hospital Dresden and offers experts from the field of hospital IT a platform to discuss current topics and developments. The central topic of the conference was "Interoperabel auf dem Weg in die Cloud?". The Managing Director of OR.NET e.V. and ICCAS research associate Max Rockstroh gave a presentation on this occasion entitled: "The missing link: Die Zukunft der Gerätevernetzung mit SDC". This is about future-oriented approaches to secure and interoperable networking of medical devices and services in hospital IT management.

September 26th – 28th, 2023 - Duisburg ICCAS @ 57th BMT 2023

In 2023, ICCAS once again took part in the BMT -Biomedical Engineering Conference with a large number of scientific contributions. This is one of the largest platforms for European scientists, doctors, engineers, researchers, students and young professionals. As every year, the focus is on sharing knowledge and experience on the latest biomedical trends and their results.

Andreas Melzer and other ICCAS scientific staff have made numerous contributions to the BMT. Among other things, Andreas Melzer chaired the meeting and was the initiator and co-founder of the "Medical Robotics" expert committee. He also chaired the sessions "Ultrasound, Robotics ans Society I + II" and the Joint Session of the "DGBMT & DGHNO: Zukunft des Hörens."



September 27th, 2023 – Hoyerswerda ICCAS @ 7th Life Science Forum in Saxony

Once again, more than 100 representatives from companies, institutes, research facilities, clinics and municipalities met at the 7th Life Sciences Forum Saxony in the Lausitzhalle in Hoyerswerda to discuss the current state of digitalization in the healthcare industry, the potential of telemedicine and digital health applications as well as the development of the Lausitz healthcare model region.

The ICCAS was also represented with a presentation by Thomas Neumuth on the topic: "Medicine of the future from Saxony: How we successfully put high-tech innovations into practice".

October 17th - 18th, 2023 - Seoul, Korea ICCAS @ National Cancer Center in Korea

Andreas Melzer accepted the invitation of the National Cancer Center of Korea to give his introductory presentation on "Potential of Focused Ultrasound for the treatment for Cancer" as a visiting professor in Seoul.

October 19th - 21th, 2023 - Lukang, Taiwan ICCAS @ 34th iSMIT Conference

For the 34th time, the annual conference of the International Society for Medical Innovation and Technology (iSMIT 2023) took place to discuss the latest innovations in the field of minimally invasive therapies, AI, robotics and image-guided surgery.

Andreas Melzer moderated the named lecture "John Wickham" (founder of SMIT) and opened the lectures "John Able" (founder of Boston Scientific), Gerhard Buess (pioneer of endoluminal MIS) and Earl Owen (pioneer of hand transplantation).

He also moderated the "Focused Ultrasound" session and gave a lecture on "Novel Technologies and Applications of FUS". The ICCAS is conducting research into new FUS devices and applications with KUKA robotic arms, including wireless ultrasound devices and in the field of neuromodulation in cooperation with the MPS NCS. Another topic was device integration in the OR, which was also the subject of a presentation by Andreas Melzer.

October 20th – 21th, 2023 - Nizza, Italia ICCAS @ 10th Annual EMSCO Meeting

The European Myelodysoplastic Syndromes Cooperative Group (EMSCO) met for the 10th time to discuss the latest research findings on myelodysplastic syndromes (MDS), in which altered blood-forming cells develop in the bone marrow. Alexander Oeser from ICCAS gave a presentation entitled "Common artificial intelligence projects in MDS" in the session "Discussion about unmet needs, future clinical trials, future fundamental research" and explained new methods that can be used in the treatment of MDS. AI and machine learning with the help of algorithms can be used to support this.

October 24th - 27th, 2023 - Berlin ICCAS @ DKOU 2023

Thomas Neumuth was at this year's Deutscher Kongress für Orthopädie und Unfallchirurgie (DKOU), which was held under the motto "#KompetentlnQualitätUndFortschritt" This focused on examining current quality initiatives and developing effective strategies to improve the management of treatment quality.

Thomas Neumuth chaired the session "Between science fiction and everyday clinical practice -Al-supported applications in O&U - opportunities, limits and responsibility". The session addressed the extent to which digitalization and Al can change the healthcare industry.

October 31th – November 03rd, 2023 - Bucharest, Romania

ICCAS @ RAES-ESS International Joint Meeting 2023

In Romania, the 12th Annual Meeting of the European Association of Surgery was held for the first time and was accompanied by the traditional national events: the 12th National Congress of the Romanian Association of Endoscopic Surgery and other Interventional Techniques (ARCE), the 14th Romanian Symposium on Bariatric and Metabolic Surgery and the 4th Romanian Symposium on Robotic Surgery. ARCE actively promotes, both in Romania and internationally, the introduction and application of new medical technologies and procedures,

especially in surgery.

Andreas Melzer was director of the "Abdominal Ultrasound for Surgeons" course. Andreas Melzer also gave the renowned "Sergio Duca" plenary lecture on "The journey from minimally invasive surgery to non-invasive surgery" and was chairman of the "iSMIT Session" with the lectures "Advances in imaging guided robotics".

He was honored for his achievements and advances in the field of minimally invasive surgery.



November 06th – 08th, 2023 - Cologne-Bonn ICCAS @ Hackathon: FAIRification Game for Software

Johannes Keller took part in this year's Hackathon: FAIRification Game for Software, working on a collaborative project to develop a tool to demonstrate the benefits of FAIRification for software.

FAIRification is a framework that contains tools and guidelines to transform life science data into concrete and proven workflows according to the FAIR principles (Findable, Accessible, Interoperable, Reusable).

November 13th - 16th, 2023 - Düsseldorf ICCAS @ Medica Tech Forum 2023

The Medica Tech Forum 2023 is a leading event for medical technology and healthcare innovations, which took place this year from 13th - 16th November 2023. ICCAS was also involved in the 4-day forum with two contributions.

Thomas Neumuth gave a presentation on the topic: "VDE Connected Health Initiative: The impact of 5G and 6G telecommunication technology on medicine."

Max Rockstroh gave a presentation entitled: "VDE Connected Health: The importance of connectivity for medical care today and tomorrow", providing an insight into current healthcare provision and its prospects for the future



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November 16th, 2023 - Leipzig ICCAS @ futureSAX - Sächsischen Transferforum

The Innovation Center Computer Assisted Surgery (ICCAS) was represented with two projects at the Saxon Transfer Forum, which took place on 16th November 2023 at Leipzig/Halle Airport, an event that serves as an interface for science, business and politics. The event was organized by futureSAX, an initiative of the Saxon State Ministry of Economic Affairs, Labour and Transport, and provided an excellent platform for the exchange of innovative ideas and technologies. ICCAS presented the projects in the field of hyperspectral imaging and model-based decisionmaking.

PROJECTS AND RESULTS IN Q3 & Q4

Start of the new VOLTA project on 01.10. 2023

The VOLTA project is a follow-up project for the IT platform "KAIT", which was developed by ICCAS in cooperation with the Department of Hematology, Cell Therapy and Hemostaseology at the University Medical Center Leipzig. This platform is used to analyze medical information, especially in the context of therapy decisions for patients with multiple myeloma. The aim of "KAIT" is to provide doctors with up-to-date information on therapeutic options to enable them to make informed decisions. This should help to improve the treatment of myeloma patients in Germany, regardless of their location.

Start of the new RescEU EMT project on 01.11.2023

The "EMT Operating System" (EOS) is an information system that is specially tailored to the needs of first responder units in disaster relief missions. These will be deployed in the event of disasters such as earthquakes, tsunamis and floods to support the local healthcare system. As part of the "RescEU EMT" project, the system will be expanded to include modular, flexibly deployable units. EOS supports the entire treatment process from triage to discharge of patients and can be adapted to the individual requirements of the units. It is not only used for electronic patient records, but also offers functions for mission and hospital management on site. The functions of EOS include patient management, treatment documentation, department configuration, visualization of hospital performance indicators and reporting functions. It plays an essential role in monitoring and evaluating the current situation and performance at strategic and tactical levels. EOS is highly customizable and can meet the needs of specialized teams. It uses structured data entry and storage to ensure information quality and support mandatory reporting.



November 08th, 2023 - Leipzig 3MP-FUS mid-term milestone conference

The mid-term milestone meeting in 3MP-FUS: Multimodality Multi purpose Multi platform Focused Ultrasound - "Neuromodulation in rare neuropsychiatric disorders with focused ultrasound" took place on November 8th, 2023 at ICCAS. The collaboration in 3MP-FUS enables the development of a clinical MRI and neuronavigated focused ultrasound system for neuromodulation of neuropsychiatric disorders. ICCAS invited the representative of the Federal Ministry of Education and Research - Melanie Kuffner (VDI Technologiezentrum GmbH, Düsseldorf) - to discuss the latest developments of the project together with technical and medical experts. The highlight was a demonstration showing the integration of Localite GmbH's neuronavigation software with the focused ultrasound system (FUS) for neuronavigation developed by the Fraunhofer IBMT.

PUBLICATIONS IN Q3 & Q4

A comparison between a maximum care university hospital and an outpatient clinic - potential for optimization in arthroscopic workflows?

Schenk M, Neumann J, Adler N, Trommer T, Theopold J, Neumuth T, Hepp P.

BMC Health Serv Res. 2023 Nov 28;23(1):1313.

#PUBLICATIONS_AND_ MISCELLANEOUS

MISCELLANEOUS IN Q3 & Q4

Andreas Melzer's team won this year's Hamlyn Surgical Robot Challenge 2023

Johann Berger, Michael Unger, Albrecht Bloße, Johannes Keller, Jochen Fuchs and Michael Moche from the Imaging Robotics project once again took part in this year's Surgical Robot Challenge at the Hamlyn Symposium on Medical Robotics. They prevailed against 8 other teams with their system MERODES - The Medical Robot Device System, and won the Best Design Award.

MERODES consists of 2 KUKA robotic arms for US image-guided interventions for networking robotic systems with the SDC standard.

Each year, leading surgical robotics groups from around the world are attracted to this international competition to present innovative new ideas for a range of surgical robotic platforms.

Link to this year's winners of the challenge: Surgical Robot Challenge 2023 Winners - Hamlyn Symposium on Medical Robotics

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Thomas Neumuth - Appointment member of WHO group on knowledge and Information management of Emergency Medical (EMT)

Thomas Neumuth has been appointed as a member of the World Health Organization (WHO) - EMT Technical Working Group on "Knowledge and Information Management (KIM)". This group consists of experts who are committed to improving the effectiveness of Emergency Medical Teams (EMT) in international disaster relief operations. Thomas Neumuth will represent the rescEU EMT - the European Commission's first pan-European field hospital funded with €106 million - in the working group. The main objective of the working group is to develop a framework and one or more systems with a single data repository for structured and linked data across the EMT lifecycle, to automate and support existing processes and to produce advanced analytics to inform strategic and operational decisions.



Winner of the Best Applications Paper Prize at the IFAC World Congress

At this year's International Federation of Automatic Control (IFAC) World Congress in Yokohama, Japan, the scientists N.A. Jalal, T. Abdulbaki Alshirbaji, P.D. Docherty, H. Arabian, T. Neumuth, K. Moeller won the Best Applications Paper Prize. The title topic of the paper is "Surgical Tool Classification & Localization Using Attention and Multi-feature usion Deep Learning Approach" With the help of this approach in medical image analysis, more accurate and efficient visualization and monitoring of surgical tools can be performed, which can lead to improvement of surgical procedures and patient safety.

September 27th, 2023 MDR-Jump Interview on the topic: "Artificial intelligence in cancer research."

In an interview with Matthias Rohrschneider on MDR Jump, Prof. Dr. Thomas Neumuth, Technical Director of ICCAS in Leipzig, talks about the use of AI in cancer research. Neumuth emphasizes the progress made in the treatment of leukemia and the potential of AI to improve the evaluation of radiological images such as CT or MRI scans by pre-filtering abnormalities. He mentions US researchers who were able to predict pancreatic cancer years in advance thanks to AI and hopes for similar developments in Germany in the next 5 to 10 years. Neumuth also discusses challenges in the application of AI in medicine, in particular the need for traceable decisions that explain why doctors make certain recommendations. While Al is already being used in the diagnosis of cancer, research is still being conducted into its use for treatment recommendations.

Start of the new winter semester 2023/24

The new winter semester 2023/24 has begun and ICCAS is once again offering students at Leipzig University and HTWK various courses and internships on the topics of computer-assisted surgery and medicine of the future: Computer Assisted Surgery and Medicine of the Future.

In the modules: "Computer-assisted surgery" and

"Introduction to computer-assisted surgery for physicians", participants are given a basic methodological understanding of the structure of medical planning and simulation systems. They will gain an insight into how medical systems work and how they are integrated into the everyday work of a doctor. The opportunities and current problems of implementation are also discussed.

The Studium Generale module "Engineering Technology for the Medicine of the Future" also gives non-specialist students the opportunity to gain an insight into current medical technology developments. Participants will be provided with basic technical knowledge on diagnostic imaging, three-dimensional visualization, surgical navigation and mechatronics through to telesurgery.

ICCAS end-of-year meeting

All ICCAS employees were cordially invited to this year's end-of-year meeting on 12th December 2023 to review the year together.

In the Saxon Incubator for Clinical Translation (SIKT), the developments and breakthroughs of the year were presented in a humorous way and illustrated what can go wrong in the implementation of computer-aided, integrative technologies and intelligent assistance systems.

Afterwards, we celebrated the end of the year together in the ICCAS offices with coffee and bagels.

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