Center of Technology and Systems

NEWSLETTER

September 2024

Too scared to collaborate?

In today's world, many of the societal problems that researchers are asked to address require a multidisciplinary approach. This involves integrating different areas of expertise, perspectives, and viewpoints to comprehensively analyze these challenges and develop meaningful solutions.

However, multidisciplinary work doesn't mean you need to become—or pretend to be—an expert in everything. Doing so often leads to oversimplified solutions and can be perceived as encroaching on others' intellectual territory. Instead, effective multidisciplinary approaches are built through genuine collaboration between researchers from diverse fields of knowledge.

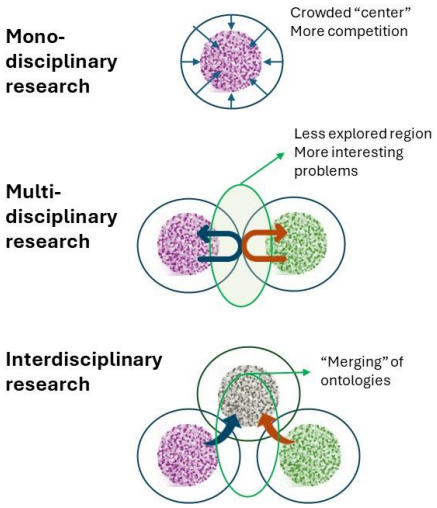
The benefits of collaboration have been well documented, including:

- Sharing knowledge, skills, and techniques,
- Stimulating innovation and creativity,
- Creating synergies and fostering cross-pollination of ideas,
- Gaining access to complementary resources and networks,
- Intellectual companionship and peer support,
- Expanded access to funding and other external opportunities,
- Enhancing the visibility and recognition of your work.
- And many more.

Yet, it's often easier to collaborate with distant colleagues than with those in close proximity. One reason is that remote collaborators are less likely to be direct competitors for the same local resources or positions. While some level of competition can drive progress, excessive internal competition within a research unit undermines its collective potential and risks isolating it from the global stage. The research challenges we face, combined with the fierce global competition, demand that we come together and foster strong internal collaboration for the benefit of all.

Successful collaboration relies on mutual respect, trust, adjustment, direct or indirect reciprocity (you cannot be a receiver only), and a commitment to fairness, including proper acknowledgment of intellectual contributions. Respecting others' work and giving credit where it's due are crucial elements of a thriving research environment.

Signs of an unhealthy culture include colleagues hoarding information, encroaching on others' research areas or students, failing to cite internal colleagues, or excluding them from opportunities, conferences, and initiatives. These behaviors reflect a fragile community. If you adopt such tactics, it may indicate fear of collaboration and insecurity in your own scientific abilities. In essence, you are not confident in what you bring to the table, and as a result, you miss out on the immense benefits collaboration offers.



To succeed in a highly competitive global landscape, we must remember that our competitors are outside our institutions, not within. By uniting our efforts through collaboration, we can go beyond multidisciplinary work to build true interdisciplinarity—pushing the boundaries of knowledge together.

Luis Camarinha-Matos, Director of CTS

Why don't we learn with Nature?


IEEE Access

Roots of Collaboration: Nature-Inspired Solutions for Collaborative Networks

https://doi.org/10.1109/ACCESS.2018.2845119

Editorial

CTS continues to drive forward the frontiers of technological advancement, with a huge commitment to shaping a future where innovation serves humanity. This summer has been a testament to our dedication, marked by the repeated presence of various CTS researchers appearing in the prestigious Stanford Elsevier world top 2% most cited scientists list, and by impactful events that highlight CTS multidisciplinary approach in tackling complex global challenges.

We are proud to have hosted the 15th Advanced Doctoral Conference on Computing, Electrical and Industrial Systems (DoCEIS) and the Young Engineers Forum on Electrical and Computer Engineering (YEF-ECE). These events provided a platform for sharing cutting-edge research, engaging in fruitful discussions, and starting new partnerships.

Beyond these events, CTS is deeply engaged in advancing a range of research initiatives that are shaping the future of technology, including the building of robust and resilient systems and bridging the gap between academia and industry. CTS fosters strong collaborations with industry partners to translate research into practical solutions that address real-world challenges, for which good examples are our participation in the Current OS Foundation, TexTOUR project, collaboration in healthcare initiatives, or the SuperConductivity based Hi-SCALE COST Action.

The summer of 2024 has been a pivotal period for CTS, demonstrating our dedication to innovation, collaboration, and societal impact. We remain committed to driving forward a future where technology serves humanity, empowers individuals, and contributes to a more sustainable and unbiased world.

João Martins, CTS Communication Officer

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Recognition

Stanford Elsevier world top 2% most cited scientists

Similar to previous years, various CTS researchers appear in this prestigious list. This list, which results from the study known as the "World's Top 2% Scientists list", coordinated by John Ioannidis from Stanford University (California, USA), was recently updated.

The study identified the 100,000 most influential researchers across 22 scientific areas and 176 disciplines, whose work has accelerated progress and productivity in their fields.


Luis Camarinha-Matos


Manuel D. Ortigueira

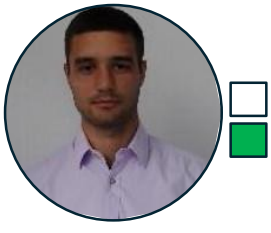

Rita A. Ribeiro ***(retired)***


João Martins


Ricardo Jardim-Gonçalves

Career-long
In 2023


Marko Beko


Slavisa Tomic


Dushantha N. K. Jayakody

https://elsevier.digitalcommonsdata.com/datasets/btchxktzyw/7 - Aug 2024

Current/OS

Joao Martins participated in the Annual General Meeting 2024 da Current/OS (30/09 - 01/10), held at ABB, Bergamo, Italy. Current/OS based DC microgrids is a non-profit, open, independent Foundation for the promotion and adoption of active DC Microgrids based on the Current/OS Set of Rules. UNINOVA is a university type of partner and Joao Martins is co-coordinating the Current/OS Education Committee.

TexTOUR

TexTOUR project had its final meeting, last 01/09 at Aguilar de Campoo, Spain. This 4-year project has developed an innovative ICT (Information and Communication Technologies) platform that serves as a guide and monitoring tool for the implementation of cultural tourism strategies. The platform helps pilots and cultural tourism stakeholders to work together and it provides key recommendations to support socioeconomic development in remote areas. CTS colleagues (Pedro Pereira, Joao Martins, Shabnam Pasandideh) have participated in this project.

Echoes from DoCEIS 2024 (IFIP Newsletter)

DoCEIS 2024 Hailed a Success

Congratulations to the team behind the 15th Advanced Doctoral Conference on Computing, Electrical and Industrial Systems (DoCEIS). The event, which ran from 3-5 July in Caparica, Portugal, was a great success! This year's conference focused on "Technological Innovation for Human-Centric Systems". The goal was to discuss how PhD research can contribute to human-machine collaboration and societal well-being, in alignment with the challenges of Industry 5.0 / Society 5.0. We are witnessing an era of rapid technological advancement, where dreams of the past are swiftly becoming reality. The term "exponential technologies" has been introduced to represent such fast evolution. The convergence of those fast-evolving technologies triggered Industry 4.0 and mostly what we now call digital transformation. Among all those technologies, AI developments led to a big hype, sometimes with overstated expectations. While Industry 4.0, very popular in the last decade, was sometimes too technology-centric, in recent years there is a growing awareness that *technology is not all that matters*. This year's DoCEIS aimed to cultivate a multidisciplinary discourse and establish collaborative avenues for early-career researchers. Participants were thus encouraged to look beyond the boundaries of their focused technical research questions and explore how their work could enrich, or be enriched by, a human-centric perspective. Sponsored by IFIP WG 5.5, IEEE Industrial Electronics Society and SOCOLNET, the event attracted over 80 participants. Proceedings are published by Spinger in the Advances in Information and Communications Technology series. In conjunction with DoCEIS 2024, there was a one-day Young Engineers Forum on Electrical and Computer Engineering (YEF-ECE 2024). This forum focused on early career engineers and MSc thesis works, with proceedings published by IEEE Xplore. The combined events featured discussions on 25 papers from DoCEIS and 21 from YEF-ECE, submitted by authors from 17 countries. The conference also included significant keynotes on emerging skill requirements, cognitive control in collaborative cyber-physical systems, and cyber-security and cyber-resilience. Additionally, there was a tutorial on creativity and innovation in the digital era, a panel on how Artificial Intelligence is shaping our lives, and a discussion with industry representatives on what companies seek in PhD candidates. For more information, visit https://doceis.dee.fct.unl.pt/ Conference chair: Prof. Luis M. Camarinha-Matos, NOVA University Lisbon, Center of Technology and Systems (CTS), Portugal.

By IFIP News|July 31st, 2024|

Awards

Best paper awards for CTS researchers

DoCEIS 2024 – 5 Jul 2024

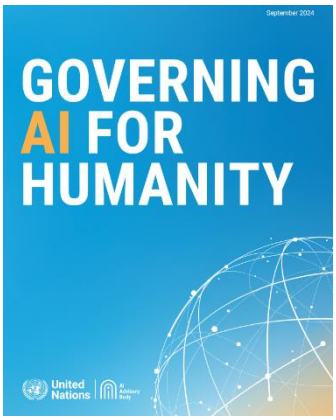
A Human-AI Centric Performance Evaluation System for Collaborative Business Ecosystems
Paula Graça, Luís M. Camarinha-Matos

YEF-ECE 2024 – 5 Jul 2024

Design of a 300mV-Supply Schmitt-Trigger-Based DIGOTA for GBW and DC Gain Enhancement in 16nm FinFET
Ricardo Machado, Pedro Toledo, Luis Oliveira, Miguel Máximo, Mauro Santos and João Oliveira

RECOMMENDED READINGS

The future of European competitiveness: Report by Mario Draghi
https://commission.europa.eu/topics/strengthening-european-competitiveness/eu-competitiveness-looking-ahead_en



Governing AI for Humanity
https://www.un.org/sites/un2.un.org/files/governing_ai_for_humanity_final_report_en.pdf

PRO-VE 2024

25th IFIP/SOCOLNET Working Conference on Virtual Enterprises

Co-sponsored by CTS
Albi, France – 28-20 Oct 2024

Main theme: Navigating Unpredictability: Collaborative Networks in Non-linear Worlds

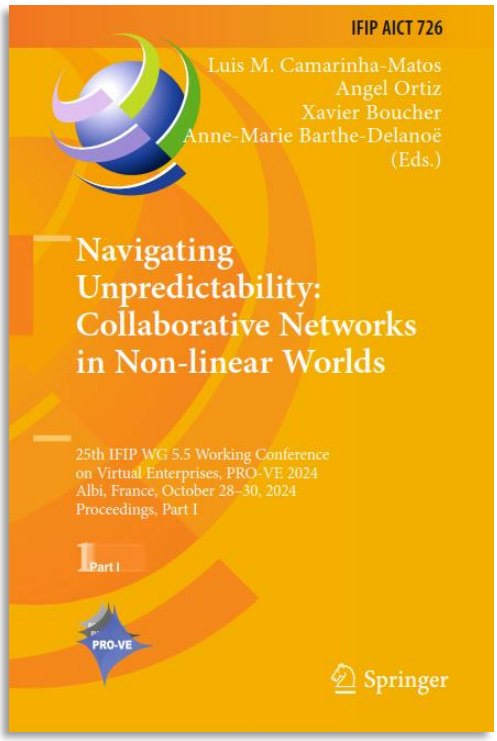
The present course of our 'non-linear world' highlights the profound unpredictability in modern environments, economies, and societies. The intricacies of our economic and industrial dynamics are interwoven with various dimensions, including political, sociological, and ecological crises, resulting in continuous periods of unpredictable fluctuations reflected in the VUCA acronym (volatile, uncertain, complex, and ambiguous). This unpredictability challenges conventional linear models of systems control and management. To tackle these systemic dynamics, the concept of 'navigation' metaphorically represents novel approaches to designing and managing organizations and ecosystems. Successful navigation requires a delicate balance between establishing clear and stable directions for our collective journey and embracing strong adaptability to carve effective paths into the future.
This needed approach thrives on adaptability, nurtures innovative thinking, and relies on interconnected relationships among the key stakeholders of our ecosystems. The 25 years of scientific background developed by PRO-VE in designing and managing collaborative networks stand as a key response to non-linear challenges. Collaboration becomes the linchpin for fostering resilience, embracing change, implementing agile management, and working at the convergence and synergy between quantitative and qualitative management approaches, as well as between engineering and socio-human sciences, addressing the multifaceted challenges of our ever-evolving world.
PRO-VE 2024 is a forum for sharing and discussing current developments and experiences regarding the role of collaborative networks in managing non-linear Ecosystems and Societies. Contributions are invited from multiple and diverse disciplines such as Engineering, Managerial and Socio-Human sciences: industrial engineering, computer science, manufacturing, organization science, logistics, management, and social sciences, among others.

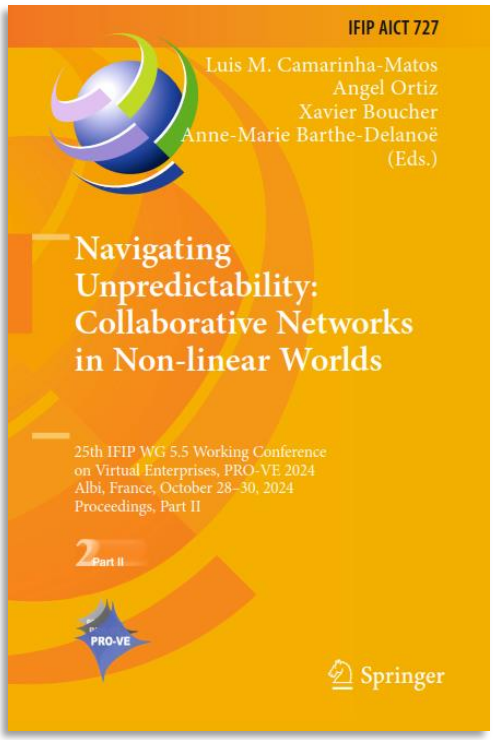
9 papers and 1 poster from CTS researchers were accepted for this conference:

- Hybrid Collaborative Networks in Energy Ecosystems - *Kankam Okatakyie Adu-Kankam, Luis M. Camarinha Matos and Eric Obeng*
- Closing the Gap: Leveraging Mass Collaboration to Support People with Disability - *Patricia Macedo, Ana Inês Oliveira, Filipa Ferrada*
- Collaborative Communication and Monitoring Ecosystem for Elderly Care - *Thais A. Baldissera, Cristiano De Faveri, Maria A. Oliveira and Luis M. Camarinha-Matos*
- Human and Machine Complementary Roles in Collaborative Evaluation of Creative Speech - *Sepideh Kalateh, Sanaz Nikghadam Hojjati and José Barata*
- Emotions in Human-AI Collaboration - *Filipa Ferrada and Luis Camarinha-Matos*
- Integrating Perception and Systemic Theories in Collaborative Networks - Enhancing Adaptability and Resilience in a Nonlinear World - *Javad Jassbi, Mahmood Alborzi and Hamed Jassbi*
- Asset Administration Shell Approach for Modular and Configurable Internet of Things Devices - *Miguel Arvana, Nelson Freitas, Andre Dionisio Rocha and Jose Barata*
- Design and Development of a Marketplace-based Collaborative Ecosystem for Software Integration and Distribution within Manufacturing - *Antonio Monte Pegado, Andre Dionisio Rocha and José Barata*
- Sovereign Citizen on Digital Regulated Services Ecosystem - *A. Luís Osório, Luis M. Camarinha-Matos, Carlos Gonçalves and Tiago Dias*

POSTER:

- Bridging the Gap in Access to Health and Care Services for Vulnerable Populations: The E-Help Approach - *Ana Inês Oliveira, Filipa Ferrada, Sanaz Nikghadam-Hojjati and Eda Marchetti*





Proceedings of PRO-VE 2024, in 2 volumes, are published by Springer.

Further information: www.pro-ve.org

Hi-SCALE:

High-Temperature SuperConductivity for AcceLerating the Energy Transition

The closing event of the Hi-SCALE COST Action, a major European initiative whose challenge was to promote the use of high-temperature superconducting (HTS) technologies for accelerating the Energy Transition, took place on 26 and 27 of September at UNINOVA.

COST Actions are European research networks funded by the European Cooperation in Science and Technology (COST) program. COST is an intergovernmental framework that supports the collaboration of scientists and researchers across Europe and beyond, promoting interdisciplinary research and innovation.

Meetings of the working groups (WG) that built the Action took place on the first day of the closing event. These WGs aimed at attaining specific goals to address the Hi-SCALE challenge and were designed accordingly, namely “From Materials to Devices” (WG1), “Improved Modelling and Advanced Computation” (WG2), “Industrial Challenges and Applications” (WG3), and “Economy and Life Cycle Assessment” (WG4).

The second day started with an Industry-Academia Workshop, where multiple perspectives from different stakeholders were presented, including R&D entities (Prof Antonio Morandi, University of Bologna), technology developers (Géraldine Salque, ITP Interpipe, and Giovanni Grasso, ASG Superconductors), superconductivity initiatives (Wolfgang Walter, CONECTUS, and Ziad Melhem, Superconductivity Global Alliance), and end-users (João Maciel, EDP NEW, and Ricardo Pastor, R&D NESTER). The workshop ended with a roundtable with all the stakeholders, moderated by Prof João Martins, which explored the challenges, opportunities, and obstacles, among other aspects, in adopting and disseminating HTS technologies to meet the demands of sustainable energy systems.

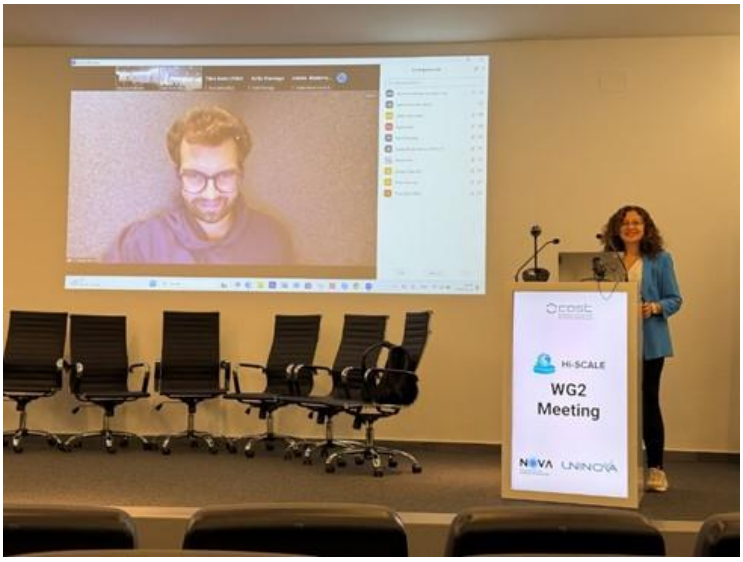
After the workshop, the Final Hi-SCALE Conference took place, where its main results were presented, particularly an Action book and a database of references to properties of materials for HTS-based devices. The latter resulted from a joint effort between the University of Geneva (Pablo Cayado), UNINOVA (João Murta-Pina and João Rosas), and the University of Leicester (Harold Ruiz). The

database will be available at http://sc.hi-scale.grisenergia.pt/, and participants recognised and emphasised its importance to the community. The contribution of Hi-SCALE to R&D efforts in HTS cable projects throughout Europe has also been highlighted through distinct presentations. The conference concluded with a session on the techno-economic potential of HTS applications.

The last Management Committee Meeting of Hi-SCALE, led by João Murta-Pina, Chair of the Action, ended the two-day event, underscoring key outcomes of the network, such as the considerable amount of researchers that were allowed to develop their work and careers through short-term scientific missions abroad.

Webpages:

- https://hi-scale.eu/
- https://www.cost.eu/actions/CA19108/



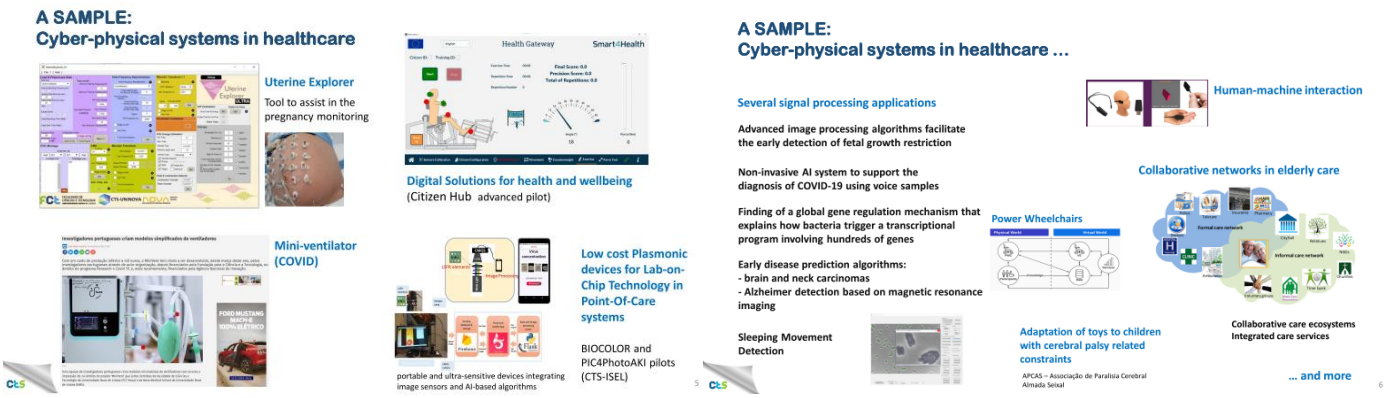
New initiative

CEACREB - Clinical Academic Centre in Rehabilitation

Santa Casa da Misericórdia de Lisboa and NOVA University Lisbon have recently signed a protocol to establish CEACREB, committing both institutions to promoting research and development in the field of rehabilitation, as well as a joint degree in social services management.

The initiative involves Alcoitão Higher School of Health, Sant'Ana Orthopaedic Hospital, Alcoitão Medicine and Rehabilitation Centre, and some research units of NOVA FCT, such as CTS.

A first joint meeting of research representatives from these institutions took place on the Caparica Campus on 16 Sep 2024, where Prof. Luis Camarinha-Matos presented CTS's expertise and activities in healthcare.



Signature of the protocol between NOVA University Lisbon and Santa Casa

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CTS Newsletter is a publication of CTS-UNINOVA

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