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Data-Centric Engineering (DCE) is a journal dedicated to the transformative potential of data science for engineering science and practice, using an open-access model that does not impose financial barriers on authors.

The **Translational Section of DCE** explores the role of computing in the data-driven world by introducing a new publications model, designed for academics, practitioners, and industry professionals, this publication acts as a catalyst for engagement with end-user organizations, effectively communicate the impact of their work to a broader audience, and receive recognition for their efforts.

The focus is on creating engineering systems, or parts of systems, and tools where **real-world** data is collected, processed, and analyzed to support the needs of individuals and society "in the wild" outside the lab, in a **testbed or full deployment.**

This field presents deep challenges in system design, data management, data collection, machine learning, and data science, among others. The journal focuses on applications in areas such as healthcare management, hardware innovations, data-driven manufacturing, and data-driven sustainability.

As an emerging field, Data-Centric Engineering has the potential to bring about significant progress against societal and economic challenges when deployed in real-world settings. As these technologies continue to evolve at an increasing pace, it becomes crucial to have a pathway that enables impact at scale and facilitates knowledge transfer between researchers, practitioners, and industry.

We embrace a challenge-led approach to science and innovation, with a focus on translating research excellence into societal impact and commercial success. To support this approach, we maintain and develop the foundations of world-class data science and AI research. By highlighting the challenges faced during deployment and the lessons learned, these articles aim to facilitate the transfer of knowledge and best practices.

Authors from academia, industry, and practitioners are welcome to contribute to the translational articles in DCE. The defining factor of a translational article is the emphasis on knowledge transfer rather than the affiliation of the author. These articles should be concise (around 5,000 words), with a focus on the setting

in which data science has been applied, the challenges encountered during deployment, and the lessons learned. The methods used to enable knowledge transfer should also be discussed.

Some of the key areas that needs to be addressed in translational papers are:

- The setting in which the engineering system was implemented, challenges, and solutions, including testbeds, trials, or full deployments.
- Target users and the nature of inter-, multi- and transdisciplinary collaborations.
- Data sources were used for the study and what was the rationale behind their selection.
- Methodology and system approach.
- Lessons learned for the deployment and engagement with the challenge owner. Who could or should replicate the study and for what purpose.

Example topics for Translational articles (but not limited to):

- Data-driven computational and AI techniques that help build highly-reliable, resilient, and robust **transport** smarter infrastructure.
- Data-driven complex engineering systems, involving **fluid flow and combustion, electrical power networks, materials and structures, and chemical processes**.
- Data-driven **predictive maintenance** uses data and machine learning to predict equipment failures, reducing unplanned downtime and maintenance costs.
- **Digital Twins** of real-world systems capable of simulation, design, uncertainty prediction and real-time control.
- Monitoring of large-scale implementation of adaptive water & **hydraulic networks** in complex operational systems.
- **Pilots and trial activities** to identify potential deployment and technical challenges for complex systems, seek to remove barriers to deployment, reduce commercial risks associated with future investment.
- **Autonomous vehicles and transportation** systems: from self-driving cars to drones and beyond, these systems are revolutionizing the way we move people and goods.
- **Personalized health and wellness systems**: using machine learning, these systems are able to provide individualized recommendations for diet, exercise, and medication based on real-time data.
- **Industrial automation and robotics**: from factories to warehouses, these systems are increasing efficiency, reducing waste, and improving the safety of workers.
- **Real-time fraud detection** and **crime prevention testbeds**.
- Data-centric engineering deployment in large spaces such as amusement parks or city centers.
- **Environmental monitoring and management systems**: utilizing sensors and other technologies, these systems help us understand and respond to changes in our environment, from air and water quality to weather patterns.
- **Data Hubs & engines and Middleware.**

Template

Authors have the option of using the following DCE templates:

· DCE LaTeX template files

- Overleaf (a cloud-based collaborative authoring tool with a direct submission route to the journal)
- DCE Word template

Audience

Authors should write in a way that is accessible to both researchers, practitioners and industry professionals. DCE's open access format means that we can reach both audiences.

Length

We suggest 5,000 words in length, not including references. This keeps the article succinct for the audience and also contrasts with longer research articles.

Title

This should be succinct and refer to the setting and the problem.

Abstract

As with other DCE articles, an abstract should be included, stating that this is a translational article and summarizing the aim, approach and any findings (250 words).

Video abstracts

DCE welcomes authors of accepted papers to submit a video abstract. These may be particularly useful for translational articles. When recording the video, think about:

what is the problem being addressed
- what are the lessons learned
- what is a good graphical-visual way to bring across the idea
- where should the video refer to the paper for detail

Note: Videos may be submitted only after a paper is accepted. They are not part of the reviewing process; reviewers will continue to judge submissions solely on their scientific content.

The video can take any form that the authors would like as long as it focuses on the content of the paper.

We recommend that the video be no longer than 10 minutes, but a 15-minute conference video is acceptable provided that there are no copyright issues with sharing it.

See an example. Currently accepted formats are: mp4.

Structure

An introductory section should set out the context: the setting, the people involved, the problem being addressed and other solutions that have been attempted in the past.

A section of the article should focus on the data being used, outlining any challenges to do with its access and use.

An account of the approach taken to the problem should include a good description of the deployment or testbed environment, the methods and the analysis tools, justifications for decisions and any limitations.

Any findings should be presented with evidence describing how they were validated.

Conclude with a 'Lessons learned' section, presented as bullet points. We suggest 500 words in length.

Citations

We expect authors to refer to relevant academic literature and grey literature, with no more than 14 references.

Review process

Translational articles will undergo peer review, typically by two reviewers. Reviewers are asked to consider that these are articles specifically addressing the challenge of knowledge transfer.

Blog

If you are interested in providing a less formal, more conversational article addressed to a wide audience about data science in industry, we also welcome blog posts from authors (see this example on the DCE Blog on Medium).

Further information

For more information about contributing to DCE, see the Instructions for authors

Articles can be submitted via the DCE ScholarOne.

If you have questions about this guidance, please contact us on dce@cambridge.org