# Mapping robotics research

*Using ScimagoViz to Guide Your Publications*

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# Sommaire

**Summary**

- Quick overview of Scimago
- Top journals/conferences in robotics
- Where our team publishes
- Comparison of these journals using Scimago

**Objectives**

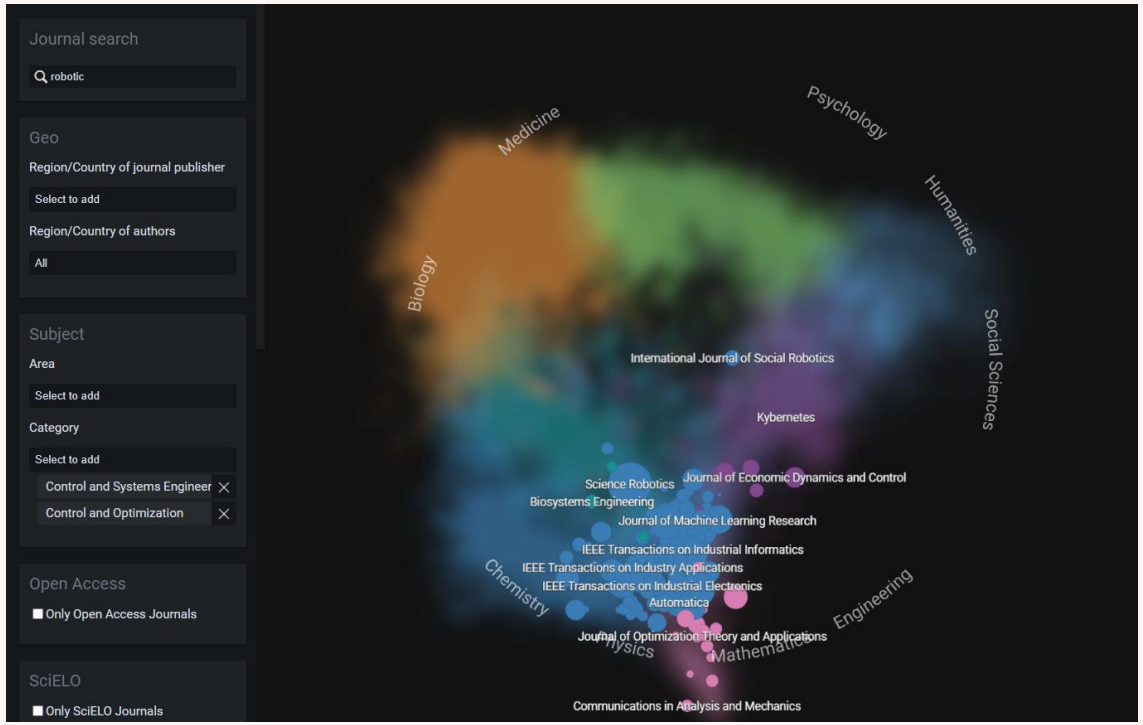
- Provide a simplified view of where the team publishes
- Clarify the main players in academic publishing and their interactions (especially for PhD students)
- Identify prestigious journals
- Explore new potential publication venues

# A ScimagoViz overview

The SCImago Journal & Country Rank is a publicly available portal that includes the journals and country scientific indicators developed from the information contained in the Scopus® database (Elsevier B.V.).

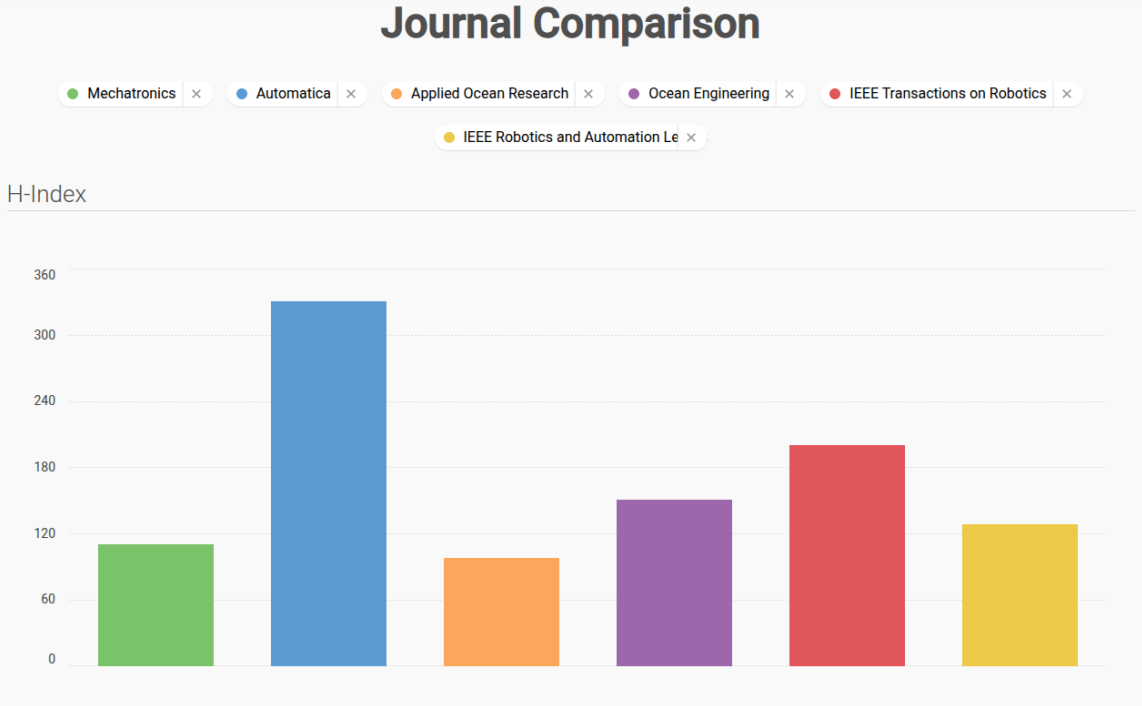
These indicators can be used to assess and analyze scientific domains. Journals can be compared or analysed separately.


*Every research journals*

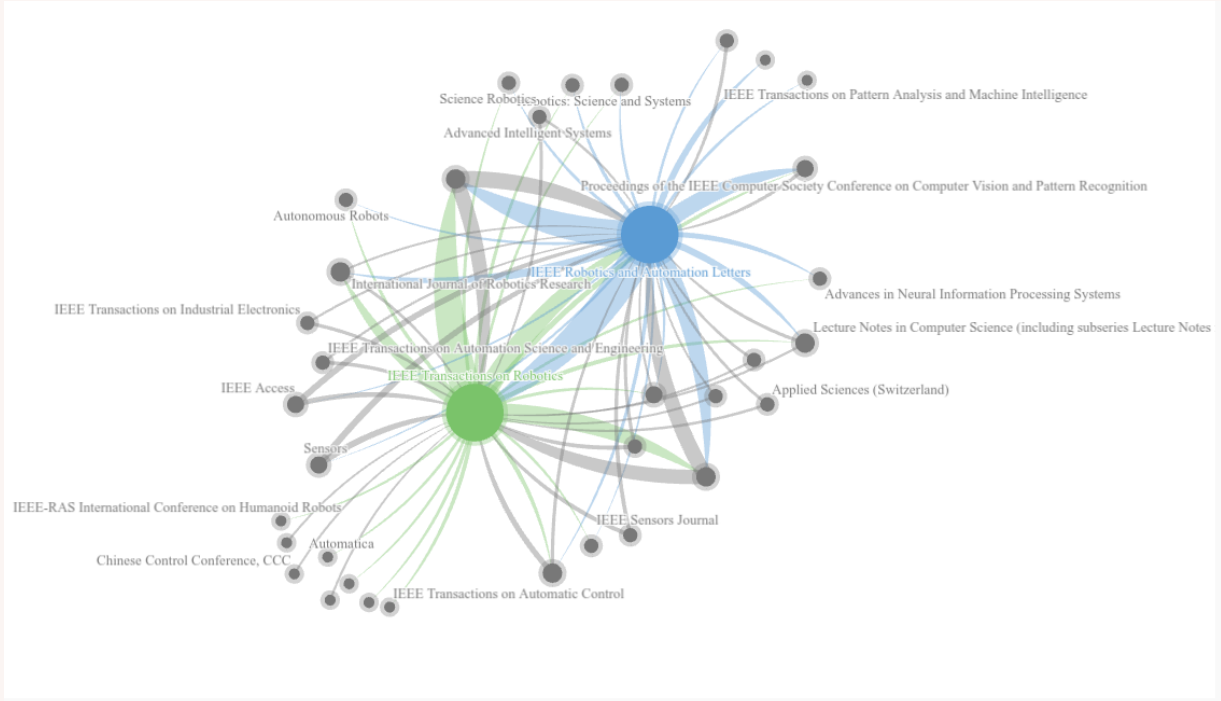



*Only control topic-centered journals*

# Journal comparison




*H-index chart*




*Citation network*

# Scimago journal Ranking

$$SJR_J(X) = \frac{\sum_{t=X-3}^{X-1} \sum_{a \in A_J(t)} \sum_{c \in C(a,X)} w(J_c)}{\sum_{t=X-3}^{X-1} |A_J(t)|}$$

With :

- $A_J(t)$: set of published articles by journal J at year t;
- $C(a, X)$: set of received citations at year X by paper a;
- $J_c$: journal from which citation c originates;
- $w(J_c)$: weights associated to citing journal $J_c$'s fame;
- $|A_J(t)|$: number of published articles in journal $J$ during year t.

The number of times, on average, an article in a given journal is cited by other articles, with each citation weighted by the prestige of the citing journal.

The **SJR** of a journal J in year X is the number of citations received in year X by all articles published in journal J over the previous three years, weighted by the prestige of the citing journals, divided by the total number of articles published by journal J during the same period.

**Q1, Q2, Q3, Q4**

# H-index definition

Let an author have $n$ articles with citation counts $\{c_1, c_2, \ldots c_n\}$ sorted in descending order:

$$\boldsymbol{c_1 \geq c_2 \geq \cdots \geq c_n}$$

Then the **h-index** $h$ is defined as:

$$\boldsymbol{h = \max(k \in \{1, \ldots, n\} |\, c_k \geq k)}$$

Measurement of the importance, reach, and impact of a researcher's cumulative publications.

The h-index of an author/journal is the number of articles by that author/journal that have each received at least $h$ h citations.

If a set of articles is ranked in descending order by the number of citations received, the h-index is the largest number $h$ such that $h$ articles have each received at least $h$ citations.

# LEADING ACTORS IN ROBOTICS PUBLISHING

# IEEE Robotics and Automation Society

Journals:

- IEEE Robotics and Automation Letters (RA-L)
- IEEE Robotics and Automation Magazine (RA-M)
- IEEE Transactions on Automat. Sci. and Enginee. (T-ASE)
- IEEE Transactions on Robotics (T-RO)
- IEEE Transactions on Field Robotics (T-FR)
- IEEE Robotics and Automation Practice (RA-P)

Conferences:

- IEEE Interna. Conf. on Robotics and Automation (ICRA)
- IEEE Interna. Conf. on Intelligent Robots and Systems (IROS)
- IEEE Interna. Conf. on Automation Science and Engineering (CASE)

# RAS journals comparison

**In summary:**

- **RA-L** = Speed, innovation, short articles.
- **RA-Magazine** = Technical popularization and broad dissemination.
- **T-RO** = Reference journal in robotics, long and fundamental articles.
- **T-ASE** = Applied automation journal, with strong industrial impact.

**T-RO (Transactions on Robotics)**

- **Type**: Leading scientific journal in robotics.
- **Objective**: To publish major advances in robotics (theory, algorithms, design, experiments, integration).
- **Articles**: Long, rigorous, and evaluated as significant and comprehensive contributions.
- **Positioning**: Flagship and highly selective robotics journal; focused on both fundamental and experimental research.
- **Particularity**: Accepted articles may be presented at IEEE RAS conferences.

**T-ASE (Transactions on Automation Science and Engineering)**

- **Type**: Scientific journal focused on automation.
- **Objective**: To publish new approaches (algorithms, models, systems, case studies) for industry and society (manufacturing, healthcare, energy, safety).
- **Articles**: Theoretical and applied contributions, with a strong emphasis on industrial impact.
- **Positioning**: Complementary to T-RO, but more oriented toward automation and applied engineering.

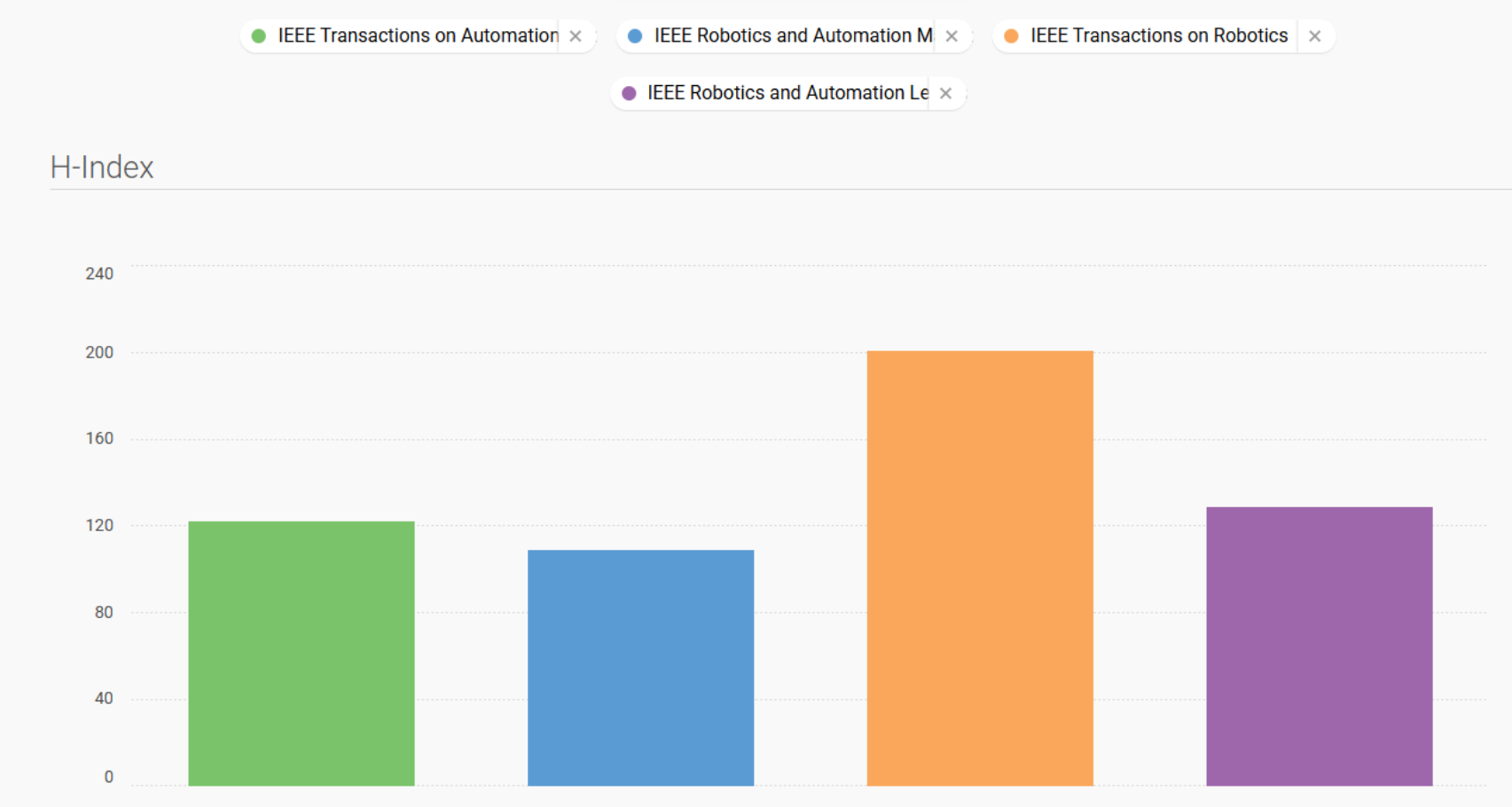
**RA-L (Robotics and Automation Letters)**

- **Type**: Online-only journal, letters format.
- **Objective**: Rapid dissemination of innovative results (final decision in ~6 months, online publication within a few days).
- **Articles**: 6 pages (with up to 2 additional pages for a fee).
- **Positioning**: Complementary to IEEE RAS conferences, focused on speed and immediate impact.
- **Particularity**: Often used to publish quickly before a conference (ICRA, IROS, etc.).

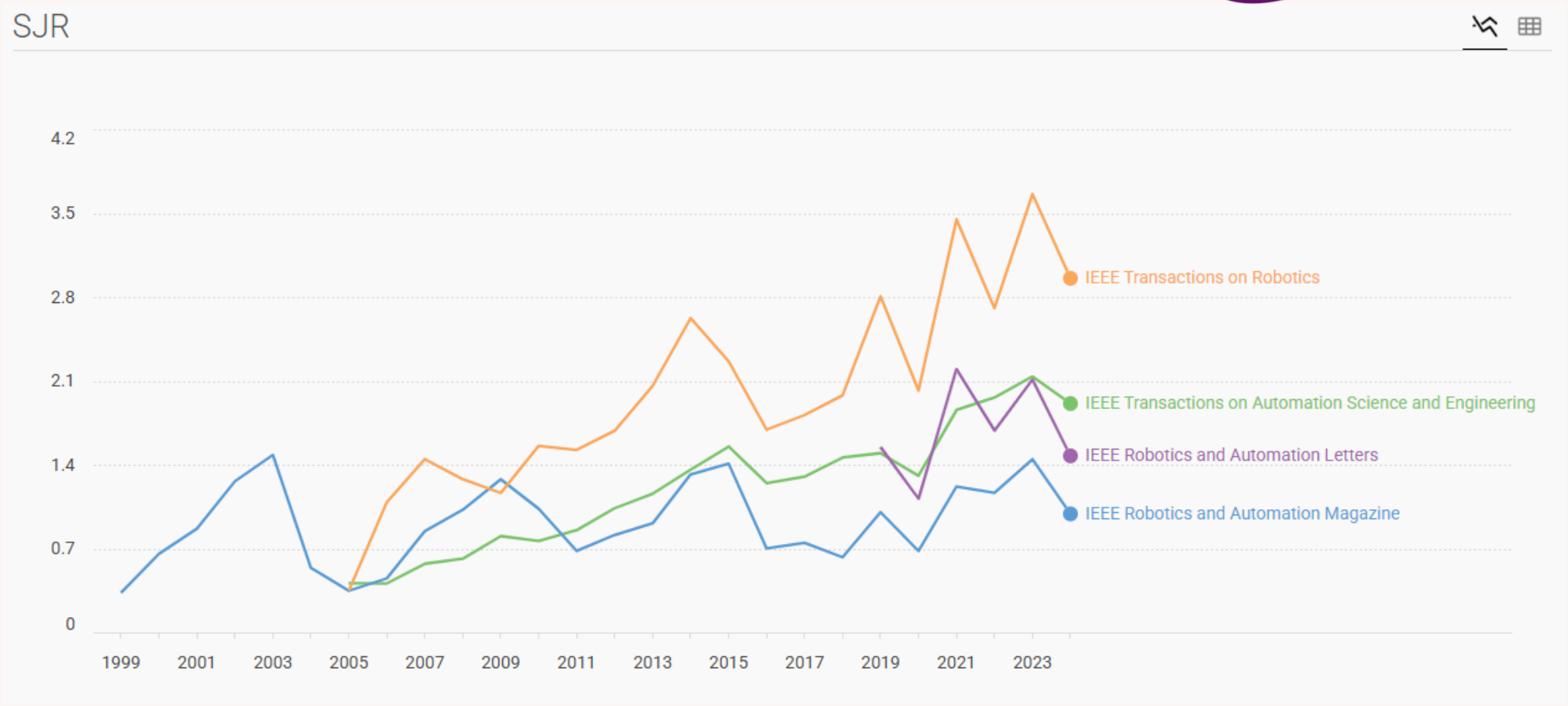
**RA-Magazine (Robotics & Automation Magazine)**

- **Type**: Technical magazine, positioned between a scientific journal and a professional publication.
- **Objective**: To make research accessible to practicing engineers; emphasizing real systems, concrete solutions, and practical experience.
- **Articles**: A mix of technical papers, tutorials, special issues, and regular sections (education, industry, calendar, etc.).
- **Positioning**: More educational and popularizing than the others, serving as a bridge between academic research and industrial application.

# RAS journals H-index comparison



# SJR over time



# International Federation of Automatic Control

INTERNATIONAL FEDERATION OF AUTOMATIC CONTROL

Journals:

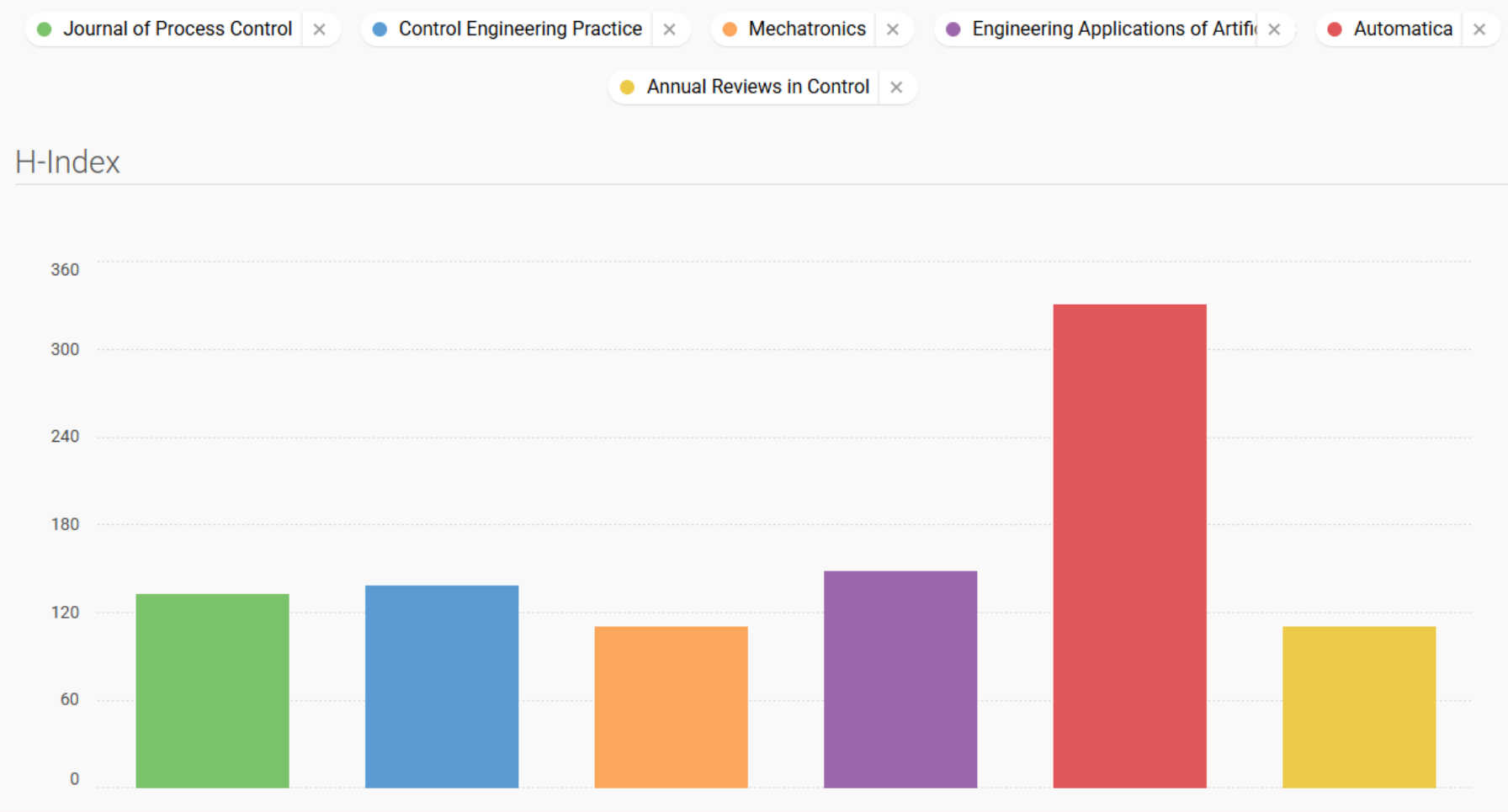
- Automatica
- Control Engineering Practice
- Annual Reviews in Control
- Engineering Applications of Artificial Intelligence
- Journal of Process Control
- Mechatronics
- Nonlinear Analysis: Hybrid Systems
- IFAC Journal of Systems and Control

Conferences:

- IEEE Interna. Conf. on Robotics and Automation (ICRA)
- IEEE Interna. Conf. on Intelligent Robots and Systems (IROS)
- IEEE Interna. Conf. on Automation Science and Engineering (CASE)

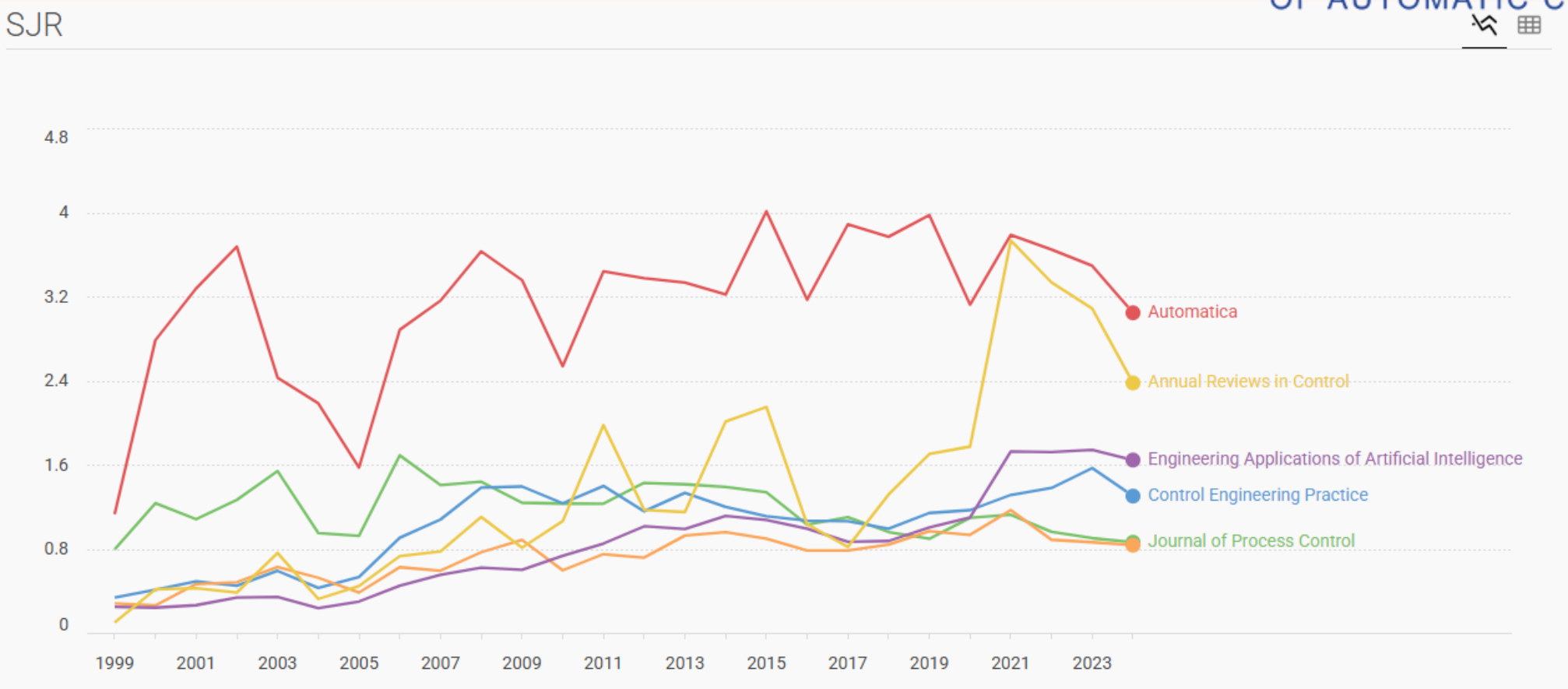
# IFAC journals H-index comparison

INTERNATIONAL FEDERATION OF AUTOMATIC CONTROL



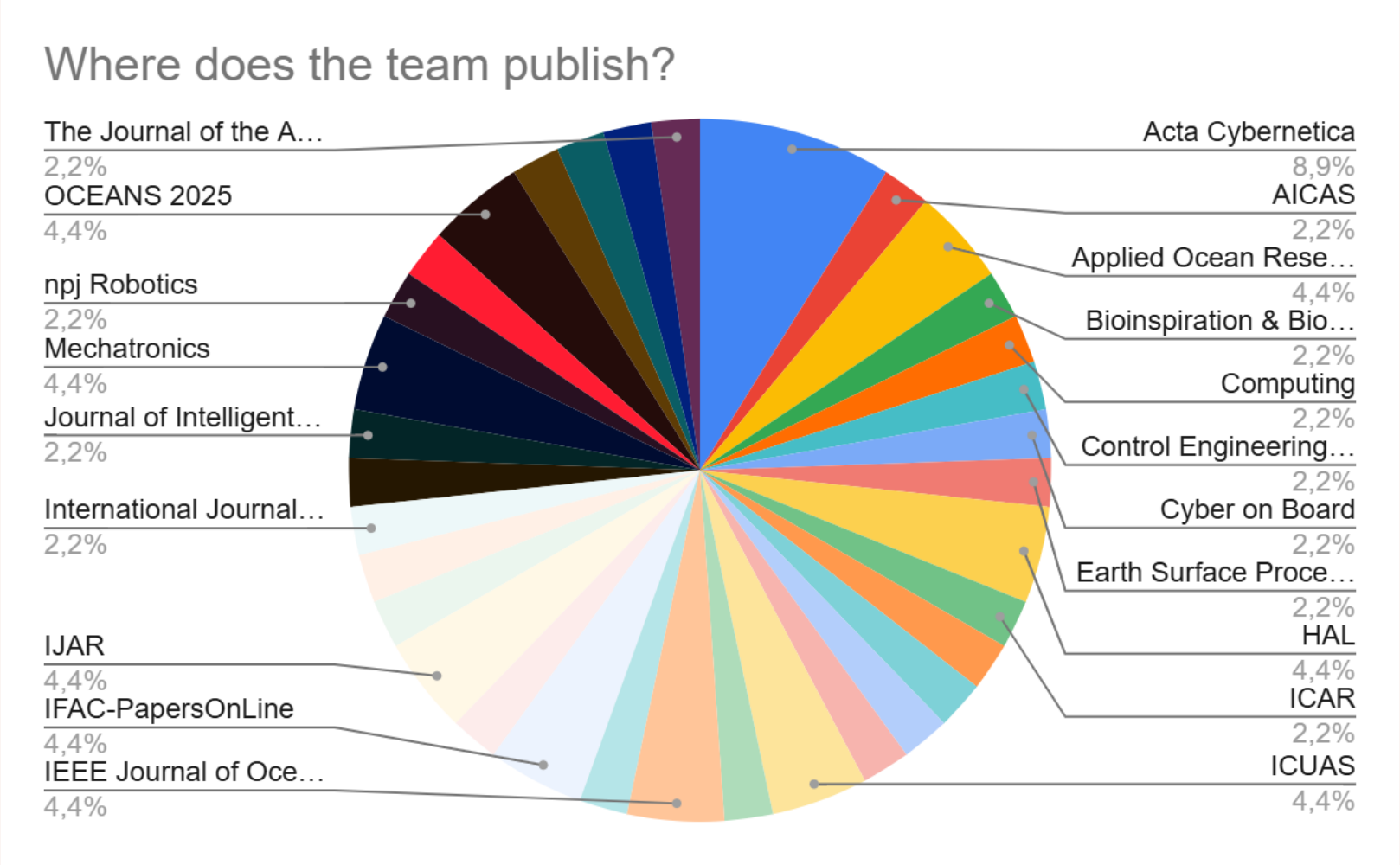
# SJR over time

INTERNATIONAL FEDERATION OF AUTOMATIC CONTROL



# WHERE DOES THE TEAM PUBLISH?

# Overview (2023-2025)



# Overview (2023-2025)

**Control:**
- Control Engineering Practice
- International Journal of Robust and Nonlinear Control
- Mechatronics
- IFAC-Papers On Line
- IFAC SSSC
- Automatica

**Intervals:**
- Acta Cybernetica
- IJAR
- REC

**Robotics:**
- ICAR
- ICRA

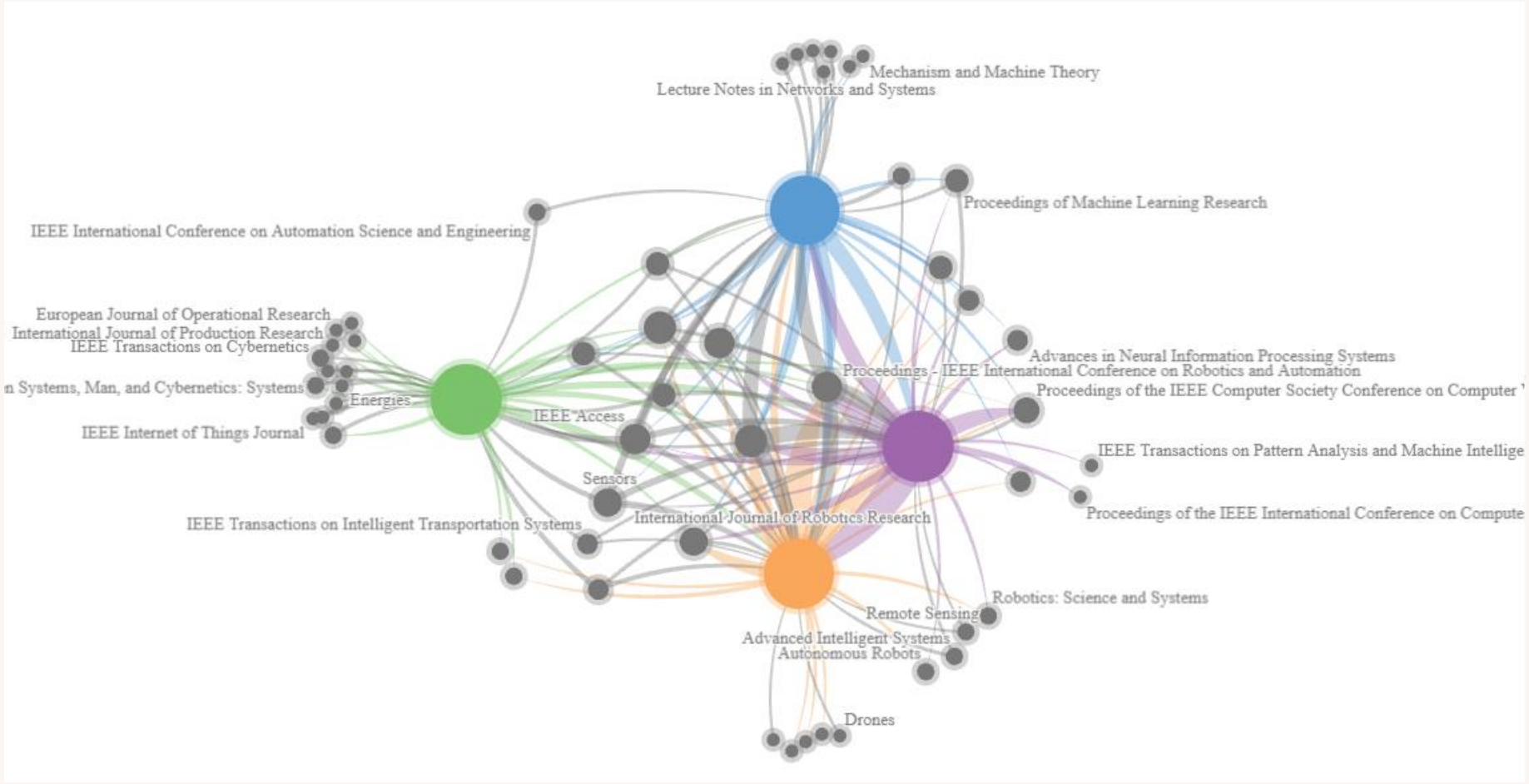
**Ocean&Engineering:**
- Ocean Engineering
- OCEANS
- Applied Ocean Research
- Journal of Hydrology
- ICUA
- The Journal of the Acoustical Society of America

**Bio-inspiration&Mimetics:**
- Npj Robotics
- Bioinspiration & Biomimetics

**Aerial Robotics:**
- ICUAS
- International Journal of Micro Air Vehicles

**Others :**
- Scientific Reports
- Computing
- ICPA
- Sensors
- AICAS
- Physical Review Research
- Cyber On Board

# RAS robotics journal citation network

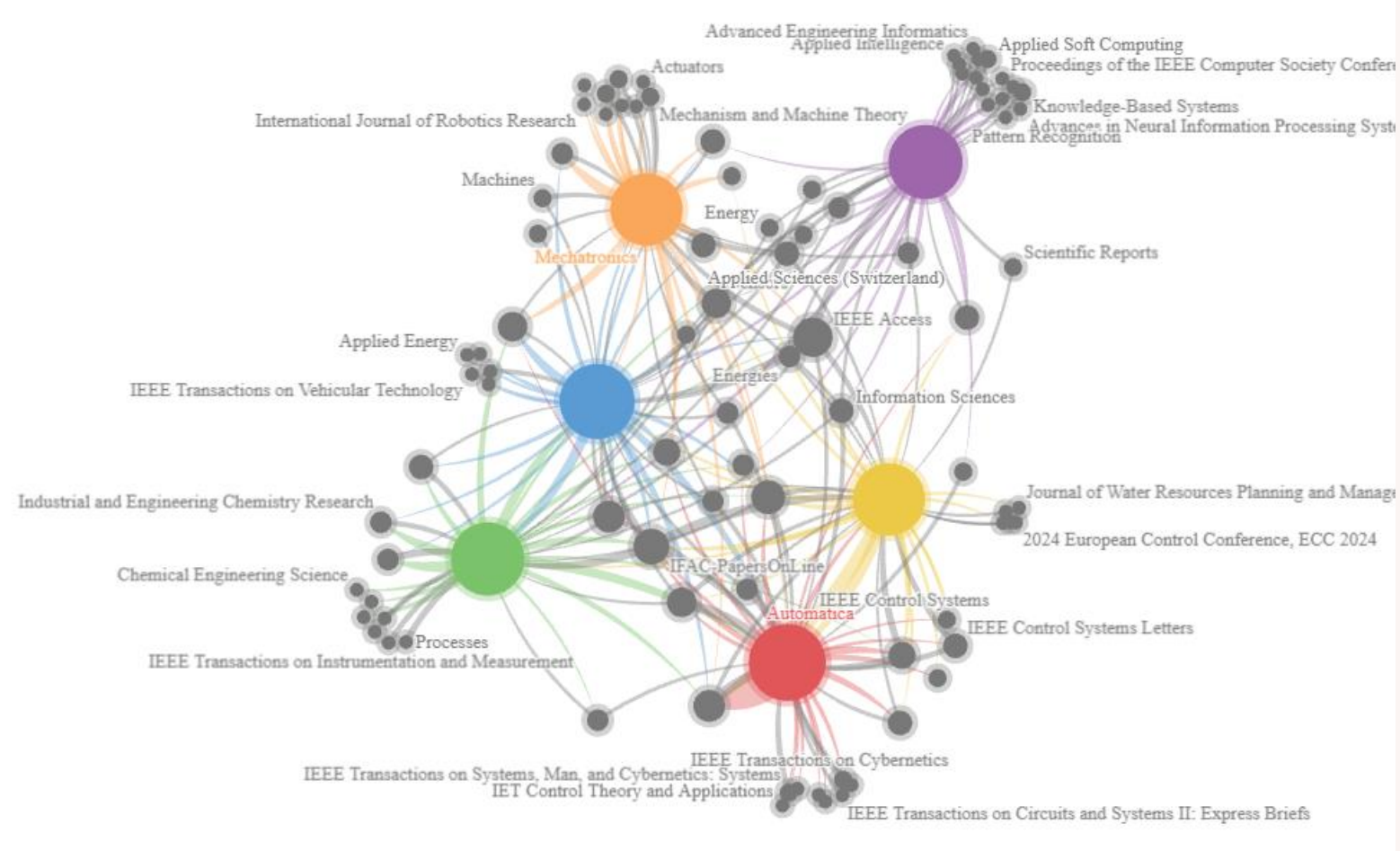



*https://www.scimagojr.com/comparejournals.php?ids[]=17340&ids[]=95101&ids[]=21100900379&ids[]=18027*

**More:**

- ICRA proceedings
- International Journal of Robotic Research
- IEEE Access

# Control journal citation network

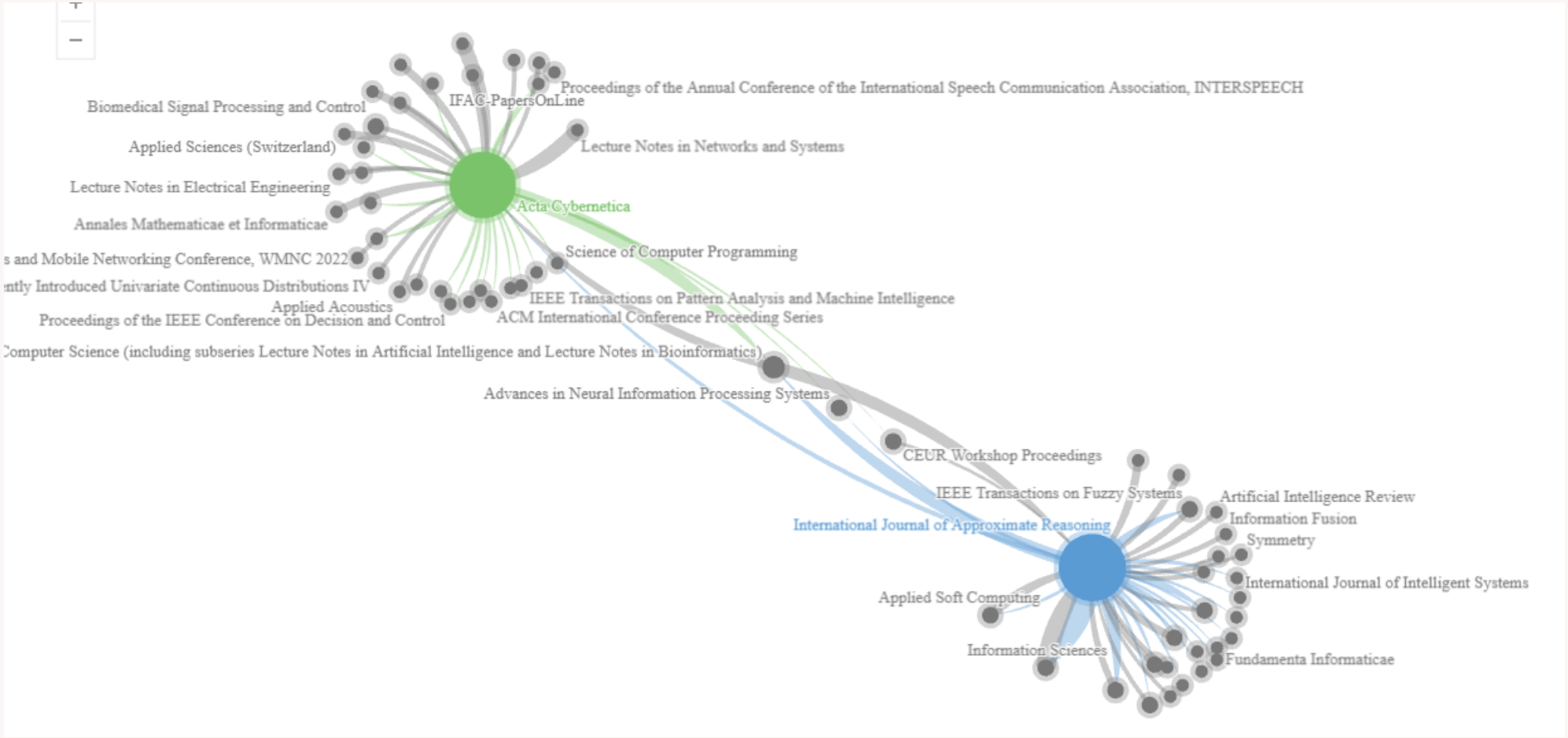



**More:**

- International Journal of Robust and Nonlinear Control
- IFAC
- Nonlinear Dynamics

*https://www.scimagojr.com/comparejournals.php?ids[]=14414&ids[]=18174&ids[]=21096&ids[]=24182&ids[]=24909&ids[]=27843*

# Intervalistic journal citation network

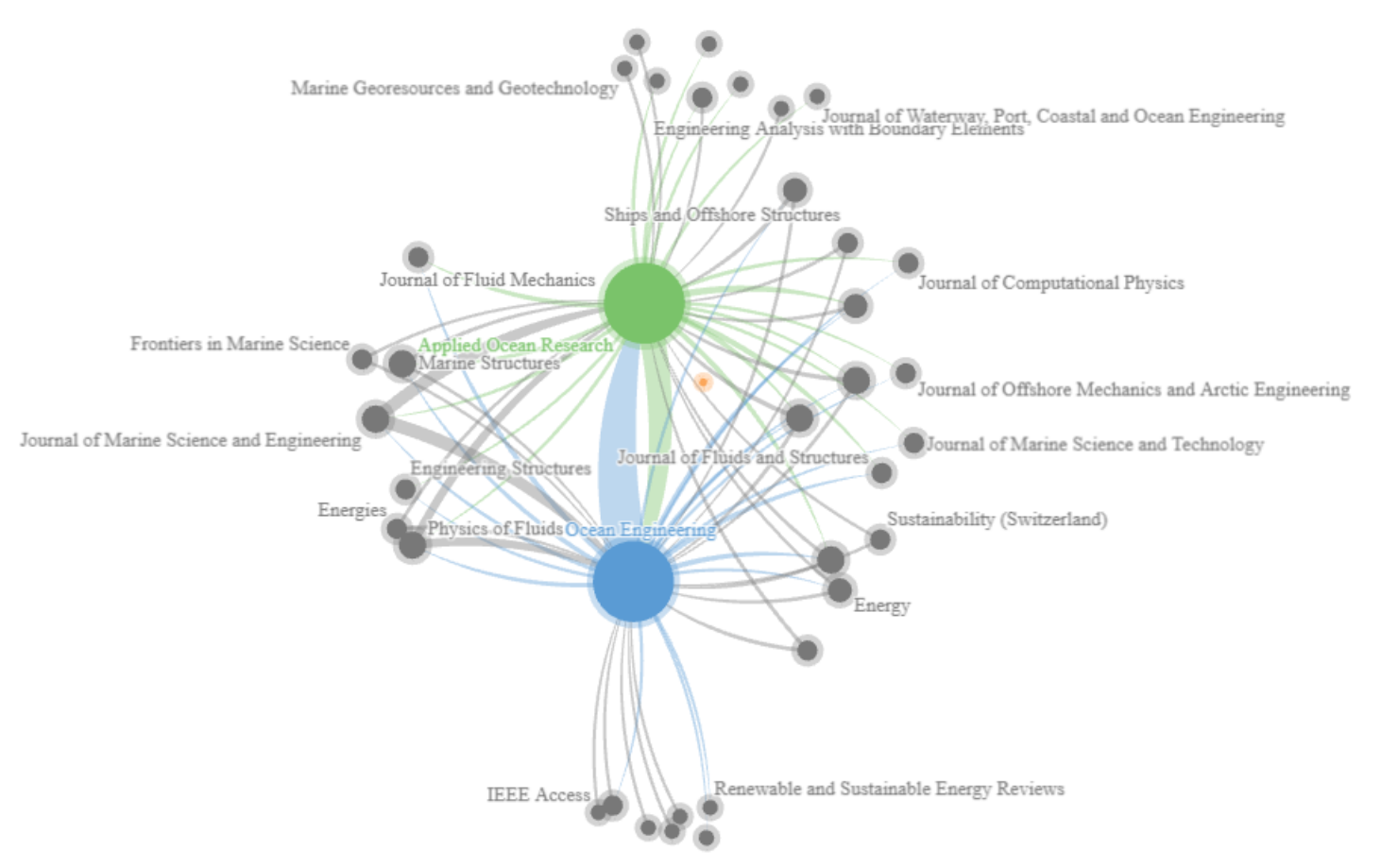



https://www.scimagojr.com/comparejournals.php?ids[]=13024&ids[]=24286

**More:**

- Computer Science

# Ocean & Engineering journal citation network




*https://www.scimagojr.com/comparejournals.php?ids[]=28339&ids[]=19400157143&ids[]=26776*

**More :**

- Journal of Marine Science and Engineering

# ANALYSIS

# Where to publish your work ?

Classics :

- IEEE : ICRA
- Intervalles : IJAR, Acta Cybernetica
- Contrôle : Automatica, Mechatronics, IFAC robotics symposium
- Ocean : Ocean Engineering, OCEANS, Applied Ocean Research

Presentation and publication opportunities:

- Classique robotique : IROS & CASE, T-RO, T-ASE RA-L, RA-M
- Soft Robotics : Soft Robotics, Bioinspiration & Biomimetics
- Très prestigieux : Sciences Robotics, Nature Robotics (npj)
- Control : Journal of Guidance, Control and Dynamics

⚠ Warning:
Recently, some open access journals such as Sensors may be viewed negatively by the community for their « pay-to-publish » aspects

# What's new in robotics publishing (Dec 2024)

IEEE Robotics & Automation Society

IEEE Transactions on Field Robotics (T-FR)

T-FR is a new scholarly journal dealing with the fundamentals of robotics in **unstructured and dynamic environments.**

The journal focuses on methods and systems designed to operate outside the built environment, where the ambient conditions can't be controlled and the scale is much larger than found indoors. Articles describing research with applications in construction, forestry, agriculture, mining, **subsea**, intelligent highways, **search and rescue**, **military**, and space are encouraged.
Papers in sensing, sensors, mechanical design, computing architectures, communication, planning, learning, and control, applied to field applications are encouraged.

# What's new in robotics publishing (Dec 2024)

IEEE Robotics and Automation Practice (RA-P)


**Potential article topics include:**

- **New field-tested algorithms** and code for tasks ranging from sensing to planning and control, as found, for example, in the **Robot Operating System (ROS),** or a comparative analysis of algorithms and code in specific real-world settings.
- The design and empirical analysis of grippers made of soft materials— which break down easily, and which are more robust?
- **Comparative analysis** of algorithms/code in specific **real-world settings** (SLAM, motion planning, visual perception, etc.).
- System integration (e.g., when building a mobile manipulator using both off-the-shelf and custom parts, what are the unexpected challenges (compatibility issues, heat dissipation)? What are some potential workarounds?

# Thanks for your attention

*« When a measure becomes a target, it ceases to be a good measure »*

Goodhart's law

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# Appendix: Eigenfactor

**Definition**

- The Eigenfactor of a journal *J* in year *X* is the percentage of citations received by all articles of journal *J* over the previous five years, relative to the total number of citations received during the same period by all articles of all journals indexed in the *Journal Citation Reports* (JCR).

$$\mathrm{EF}_J(X) = \frac{\sum_{t=X-5}^{X-1} \sum_{a \in A_J(t)} |C(a, t \to X)|}{\sum_{R \in \mathcal{J}} \sum_{t=X-5}^{X-1} \sum_{a \in A_R(t)} |C(a, t \to X)|} \times 100\,\%$$

avec :

- $A_J(t)$ : l'ensemble des articles publiés dans la revue $J$ en l'année $t$,
- $C(a, t \to X)$ : l'ensemble des citations reçues entre $t$ et $X$ par l'article $a$,
- $\mathcal{J}$ : l'ensemble des revues indexées dans le *Journal Citation Reports* (JCR).

# Appendix: Impact factor

Definition:

- The impact factor of a journal *J* in year *X* is the number of citations received in year *X* by all articles published in journal *J* during the two preceding years, divided by the number of articles published by journal *J* during the same period.

$$\mathrm{IF}_J(X) = \frac{\sum_{t=X-2}^{X-1} \sum_{a \in A_J(t)} |C(a,X)|}{\sum_{t=X-2}^{X-1} |A_J(t)|}$$

où :

- $A_J(t)$ est l'ensemble des articles publiés par la revue $J$ en l'année $t$,
- $C(a,X)$ est l'ensemble des citations reçues en l'année $X$ par l'article $a$,
- $|C(a,X)|$ désigne le nombre de ces citations,
- $|A_J(t)|$ est le nombre d'articles publiés dans $J$ en l'année $t$.