Introduction to IFAC

International Federation of Automatic Control

June 30, 2023
IFAC

- Founded in Paris in 1957.
- IFAC Members: ~50 National Member Organizations (NMOs)

<table>
<thead>
<tr>
<th>AMERICAS</th>
<th>ASIA and OCEANIA</th>
<th>EUROPE and AFRICA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brazil</td>
<td>Australia</td>
<td>Austria</td>
</tr>
<tr>
<td>Canada</td>
<td>Azerbaijan</td>
<td>Belgium</td>
</tr>
<tr>
<td>Chile</td>
<td>China</td>
<td>Bulgaria</td>
</tr>
<tr>
<td>Cuba</td>
<td>India</td>
<td>Croatia</td>
</tr>
<tr>
<td>Mexico</td>
<td>Israel</td>
<td>Czech Rep.</td>
</tr>
<tr>
<td>Peru</td>
<td>Japan</td>
<td>Denmark</td>
</tr>
<tr>
<td>USA</td>
<td>Korea, Rep. of</td>
<td>Estonia</td>
</tr>
<tr>
<td></td>
<td>Malaysia</td>
<td>Finland</td>
</tr>
<tr>
<td></td>
<td>Pakistan</td>
<td>France</td>
</tr>
<tr>
<td></td>
<td>Singapore</td>
<td>Germany</td>
</tr>
</tbody>
</table>

- In each country or region, a scientific society is a member.

Brazil: SBA, Mexico: AMCA, USA: AACC (IEEE, ASME, AIChemE, …), …
Australia: Engineers Australia, China: CAA, Japan: SCJ, Korea: ICROS, …
France: SAGIP, Germany: VDI/VGE, South Africa: SACAC, UK: UKACC, …
• **Vision**

  …for IFAC to be the worldwide federation for promoting automatic control for the benefit of humankind.

• **Mission**

  …to promote the science and technology of automatic control through technical meetings, publications and other means consistent with the goals and values of IFAC.

• **Values**
  - Honesty and Integrity
  - Excellence and Relevance
  - Sustainability
  - Diversity and Inclusivity

• **IFAC Code of Conduct**
IFAC’s Structure

- General Assembly: supreme body comprised of NMOs
- Council: manages Technical Board, Conference Board, Publications Board, and Executive Committees
- All terms of office are for three years.
Meetings

• General Assembly meets every three years at the IFAC World Congress.

• Council meets yearly at the IFAC World Congress and IFAC sponsored (or co-sponsored) conference.

• Executive Officers meet in several times per year.

• Technical Board, Conference Board, Publications Board meet at least once a year.

• Executive Committees and Technical Committees should meet at least once a year.

• All IFAC service is done on a voluntary basis.
39 Technical Committees (TCs) are organized in 9 Coordinating Committees (CCs): ~4000 volunteers serve on these committees, 9 CC Chairs are TB members, 9 CC Co-Chairs are CB Members

**THEORY**

1. Systems and Signals
   1.1. Modelling, Identification and Signal Processing
   1.2. Adaptive and Learning Systems
   1.3. Discrete Event and Hybrid Systems
   1.4. Stochastic Systems
   1.5. Networked Systems

2. Design Methods
   2.1. Control Design
   2.2. Linear Control Systems
   2.3. Non-Linear Control Systems
   2.4. Optimal Control
   2.5. Robust Control
   2.6. Distributed Parameter Systems

**TECHNOLOGY**

3. Computers, Cognition and Communications
   3.1. Computers for Control
   3.2. Computational Intelligence in Control
   3.3. Telematics: Control via Communication Networks

4. Mechatronics, Robotics and Components
   4.2. Mechatronic Systems
   4.3. Robotics
   4.5. Human Machine Systems
APPLICATIONS

5. Cyber-Physical Manufacturing Enterprises
   5.1. Manufacturing Plant Control
   5.2. Management and Control in Manufacturing and Logistics
   5.3. Integration and Interoperability of Enterprise Systems (I2ES)
   5.4. Large Scale Complex Systems

6. Power and Process Systems
   6.1. Chemical Process Control
   6.2. Mining, Mineral & Metal Processing
   6.3. Power and Energy Systems
   6.4. SafeProcess

7. Transportation and Vehicle Systems
   7.1. Automotive Control
   7.2. Marine Systems
   7.3. Aerospace
   7.4. Transportation Systems
   7.5. Intelligent Autonomous Vehicles

8. Bio & Ecological Systems
   8.1. Control in Agriculture
   8.2. Biological and Medical Systems
   8.3. Modelling & Control of Environmental Systems
   8.4. Biosystems and Bioprocesses

9. Social Systems
   9.1. Economic & Business Systems
   9.2. Systems and Control for Societal Impact
   9.3. Control for Smart Cities
   9.4. Control Education
   9.5. Technology, Culture and International Stability

Industry Committee is in TB (the chair is an ex officio Council Member)
IFAC sponsors ~70 & co-sponsors ~30 conferences every 3 years.

TB approves conferences.

CB oversees conference quality control and finances.

- IFAC World Congresses: every 3 years, attended by 3000~4000
- IFAC Conferences:
  - Symposia (Masterplan Events): every 3 years
  - Conferences: 1 or 2 times in 3 years
  - Workshops: 1 or 2 times in 3 years
- IFAC Co-sponsored Events:
  American Control Conference (ACC),
  European Control Conference (ECC),
  Asian Control Conference (AsCC),
  Control Conference Africa (CCA), and others
- IFACx labeled conferences:
IFAC Newsletter

- Six times per year
- Free to all IFAC Affiliates
IFAC Journals (2022 IF)

- Annual Reviews in Control (9.4)
- Automatica (6.4)
- Control Engineering Practice (4.9)
- Eng. App. of Artificial Intelligence (8.0)
- IFAC Journal of Systems and Control (1.9)
- Journal of Process Control (4.2)
- Mechatronics: with subtitle robotics (3.3)
- Nonlinear Analysis: Hybrid Systems (4.2)
IFAC-PapersOnLine (IFAC-POL)

• All IFAC conference papers are published in POL.
• Diamond open access:
  - No cost for readers, authors, or their institutions.
  - Authors retain the copyright.
  - Exclusive publication & distribution license to IFAC.
• IFAC pays the publisher, and there is no cost to conference organizers.
IFAC Fellows

IFAC Major Awards
Giorgio Quazza Medal
Nathaniel B. Nichols Medal
Manfred Thoma Medal
Industrial Achievement Award
High Impact Paper Awards

IFAC Textbook Award
Harold Chestnut Control Engineering Textbook Prize

IFAC Journal Awards
Automatica Paper Prize
Control Engineering Practice Paper Prize
Journal of Process Control Paper Prize
Engineering Applications of Artificial Intelligence Paper Prize
Mechatronics Journal Paper Prize

IFAC Congress Prizes
IFAC Applications Paper Prize (APP)
IFAC Young Author Award (YAA)
IFAC Congress Interactive Paper Prize (IPP)

IFAC Outstanding Service Award

IFAC Distinguished Lecturer

IFAC TC Awards

IFAC Foundation Awards
Kwon Award
D & I Award
Executive Committees

- Awards Committee (who is in the loop? Report to President)
- Membership Committee (Past President)
- Activity Funds Committee since 2023 (VP Technical Board)
- Lecturer Program Committee since 2023 (VP Conferences)
- Diversity and Inclusion Committee since 2023, ex officio Council Member (VP Publications)
- Education Activities Committee since 2026, ex officio Council Member, new (President Elect)
What is IFAC all about?

- ~50 National Members
- ~100 technical conferences every 3 years
- ~4,000 volunteers
- Governance: Constitution and By-Laws
- IFAC Code of Conduct
- History: a 308-page e-book
  https://www.ifac-control.org/about/the-ifac-story
- Individuals can join as “IFAC Affiliates”: free subscription to newsletters and conference announcements
1st Congress, 1960: Moscow (SU)
2nd Congress, 1963: Basel (CH)
3rd Congress, 1966: London (UK)
4th Congress, 1969: Warsaw (PL)
5th Congress, 1972: Paris (FR)
6th Congress, 1975: Boston/Cambridge (US)
7th Congress, 1978: Helsinki (FI)
8th Congress, 1981: Kyoto (JP)
9th Congress, 1984: Budapest (HU)
10th Congress, 1987: Munich (DE)
11th Congress, 1990: Tallinn (SU)
12th Congress, 1993: Sydney (AU)
13th Congress, 1996: San Francisco (US)
14th Congress, 1999: Beijing (CN)
15th Congress, 2002: Barcelona (ES)
16th Congress, 2005: Prague (CZ)
17th Congress, 2008: Seoul (KR)
18th Congress, 2011: Milan (IT)
19th Congress, 2014: Cape Town (ZA)
20th Congress, 2017: Toulouse (FR)
21st Congress, 2020: Berlin (DE)
22nd Congress, 2023: Yokohama (JP)
23nd Congress, 2026: Busan (KR)
24th Congress, 2029: Amsterdam (NL)
Thank you!