Short Report - GC'21 Cognitive Radio and AI-Enabled Networks (CRAEN) Symposium

Presentation at IEEE ICC 2021

- **Symposium Chairs:**
  - Prof. Daniel Benevides da Costa, National Yunlin University of Science and Technology, Taiwan & Federal University of Ceará, Brazil
  - Prof. Sangarapillai Lambotharan, Loughborough University, UK

- **Number of Submissions:**
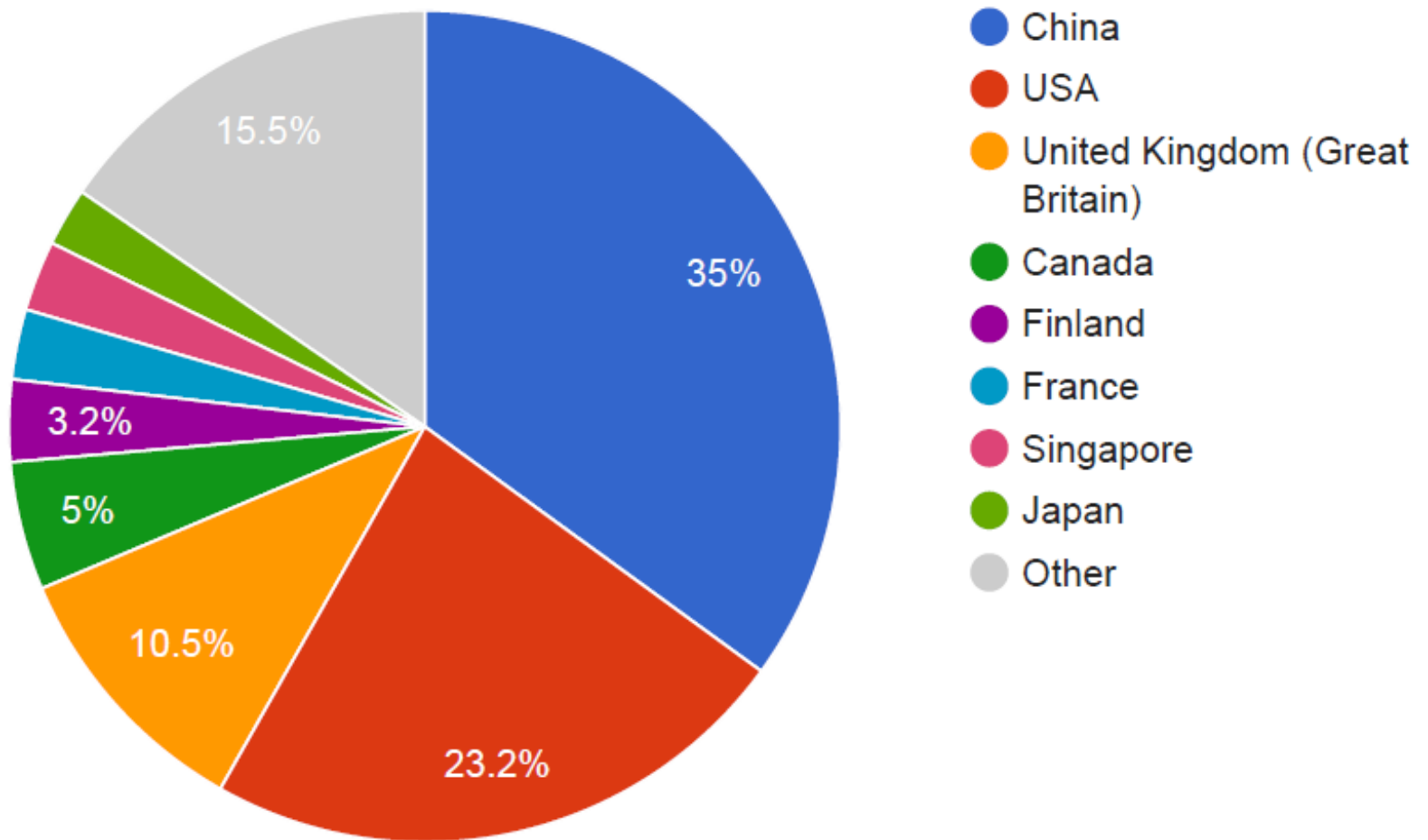 - 63 papers submitted. I expected more ☹

- **TPC Members and Review Process:**
  - Around 142 members (mix from industry and academia).
  - All the papers' assignments were concluded on 1st June (only four days after the deadline).
  - For each assigned paper, each TPC will be responsible to ensure only ONE review (either by him/herself or delegated to someone else).

Country	Number of Authors	Country	Number of Authors
China	77	Taiwan	3
USA	51	South Korea	3
United Kingdom	23	Uruguay	3
Canada	11	Sweden	3
Finland	7	Italy	2
France	6	Turkey	2
Singapore	6	Iran	1
Japan	5	Indian	1
Brazil	4	Vietnam	1
Iraq	4	Portugal	1
Spain	3	Total	220
Germany	3		

Author distribution by country

Legend:
- China — 35%
- USA — 23.2%
- United Kingdom (Great Britain) — 10.5%
- Canada — 5%
- Finland — 3.2%
- France
- Singapore
- Japan
- Other — 15.5%

Region	Number of Authors
Asia/Pacific	103
USA	51
Europe, Middle East, Africa	48
Europe	41
Canada	11
Middle East, Africa	7
Latin America	7

Regional distribution of authors

- ● Asia/Pacific
- ● United States
- ● Europe
- ● Canada
- ● Middle East and Africa
- ● Latin America

46.8%

23.2%

18.6%

5%
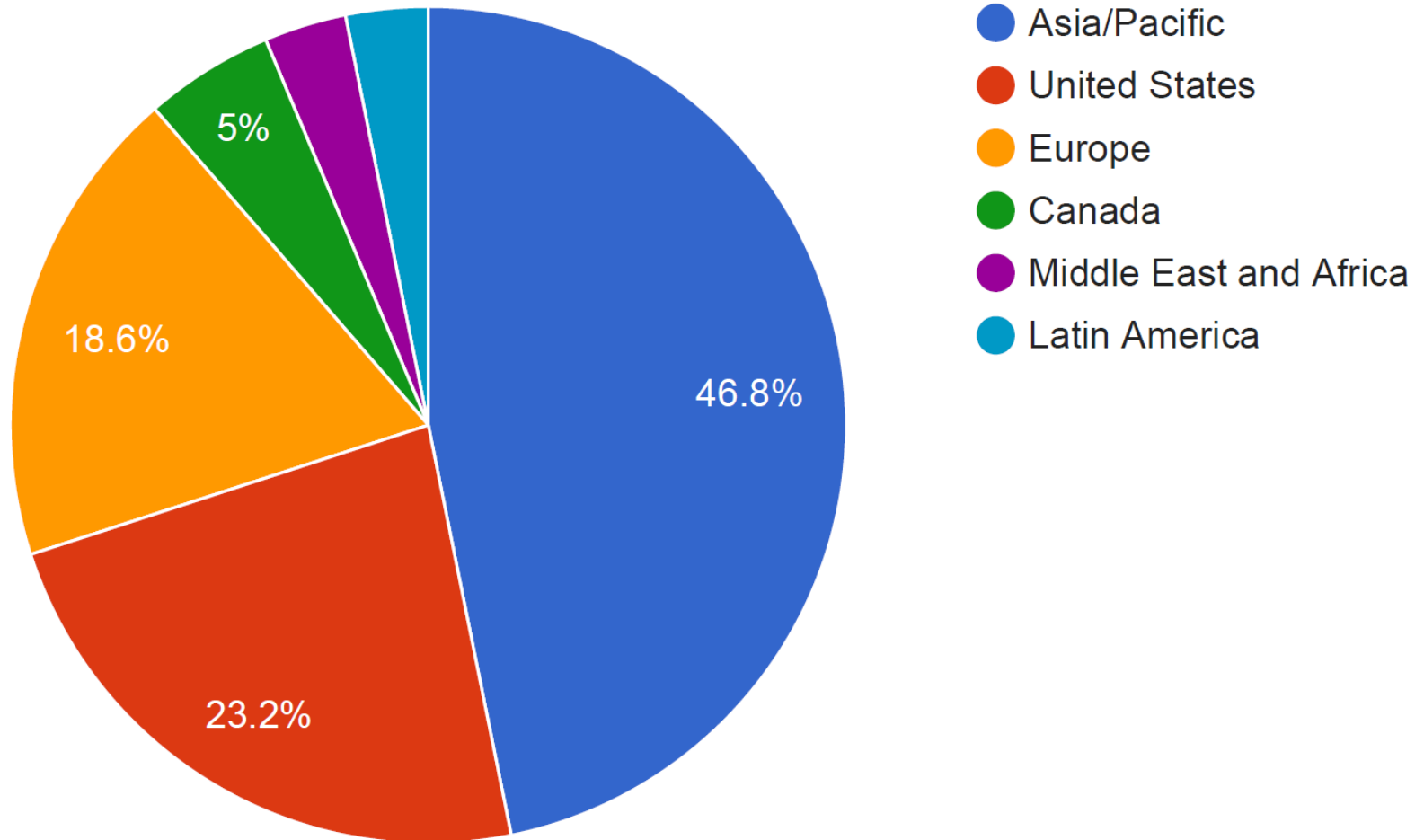
Author Type	Number of Papers
Student	21
Academia	36
Industry	4
Government	2

* Papers are counted by the fraction of authors. For example, a paper with one industrial and one academic author counts as 0.5 papers in each author category.

Topic	Count
Challenges and issues in designing intelligent radio communications	9
Challenges and issues in designing intelligent wireless networks	11
Intelligent resource allocation in cognitive radio and networks	16
Intelligent spectrum sensing, sharing and access	23
Intelligent medium access control, interference management and modelling	8
Intelligent distributed cooperative spectrum sensing and multi-user access	4
Modelling and performance evaluation for intelligent radio and networks	9
Energy-efficient cognitive radio communications and networking	4
Self-configuration, interoperability and co-existence issues	10
Machine learning techniques for cognitive radio and networks	25
Deep learning techniques for cognitive radio and networks	21
Reinforcement learning for cognitive radio and networks	14

Waveform design, modulation, and interference aggregation for cognitive radio and AI-enabled networks	4
Architecture and implementation of database-based cognitive radio networks	2
Distributed adaptation and optimization in cognitive radio and networks	6
Handoff and routing protocols for AI-enabled radio and networks	2
Economic aspects of spectrum sharing	1
Regulatory policies and their interactions with communications and networking	0
Privacy and security of cognitive radio and spectrum sharing	5
Attack modeling, prevention, mitigation, and defense in cognitive radio systems	1
Physical-layer security in cognitive radio networks	3
Quality of service provisioning in AI-enabled radio and networks	4
Spectrum sensing, learning, sharing, and access for Internet of Things	7
Spectrum sensing, learning, sharing, and access for millimeter-wave (mmWave) systems	2

Spectrum sensing, learning, sharing, and access for terahertz systems	2
Applications and services (e.g., cognitive networking in TV whitespace, adaptation with LTE networks such as LTE unlicensed, and integration with other emerging techniques)	3
Cognitive radio and AI-enabled network standards, testbeds, simulation tools, and hardware prototypes	1
Integration of cognitive radio and networks with emerging scenarios, i.e., UAV networks, intelligent reflecting surface.	4

Thank you for your attention!!

For any further information, please contact the Lead Symposium Chair (email: danielbcosta@ieee.org)