

Formation of IEEE Brain Technical Community

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IEEE Brain Technical Community Formation Statement

➤ Objectives:

- Create a technical community to facilitate cross-disciplinary collaboration and coordination to advance research, standardization and development of innovative tools and technologies in the field of neuroscience to treat diseases and improve lives
- Unite engineering and computing expertise across IEEE, and establish IEEE as an integral thought leader and contributor to the BRAIN Initiative efforts and programs around the world

➤ Approach:

- The IEEE Brain Technical Community is proposed to begin its operation on January 1, 2021. Contributions from financial sponsors will be used to support the operational expenses and activities of the Technical Community. Representatives appointed by the financial sponsors will serve on the Steering Committee to oversee the Technical Community.
- The IEEE Brain Technical Community will leverage the branding, infrastructure, activities and communities that the IEEE Brain Initiative has established to continue to grow the portfolio of assets to support its financial sustainability.

- Fields of Interest: Theory, phenomena, technology, materials, applications, and systems related to interfacing and understanding the nervous system to treat diseases and improve lives, advancing neurotechnology for the benefit of humanity.

IEEE Brain Technical Community - Status

- IEEE Brain Technical Community on track to become operational 1 January 2021
- 3 Levels of Financial Sponsors; Steering Committee governs/oversees the IEEE Brain TC
 - Core Members @ \$35K annual contribution, 2 voting reps to steering committee
 - Supporting Members @ 17.5 annual contribution, 1 voting rep to steering committee
 - Affiliate Members @ \$5K annual contribution, 1 non-voting rep to steering committee
- Currently, six (6) secured Financial Sponsors
 - Core Members – EMBS, SPS, SMC
 - Affiliate Members – CIS, EDS, Magnetics Society
- Continuing discussion with other potential sponsors
- Following and completing the TA Process Steps
 - 27 April - IEEE Future Directions Committee considers brain as a field of interest to IEEE
 - 14 August - Proposed formation of the IEEE Brain Technical Community sent to TAB for information & comments
 - 28 August – Comment period ends; comments will be shared with TMC prior to their review of the proposal
 - 27 September – TMC vote to approve the formation of the IEEE Brain Technical Community

IEEE Brain Assets

- **Recognized Branding & Infrastructure**
 - Engaged with Brain Initiative Alliance and International Brain Initiative
 - brain portal (brain.ieee.org), brain community
- **Strong Online Technical Presence**
 - eNewsletter, webinar series, podcasts, social media communities
- **Active Standards Activities**
 - Industry Connections Group and Standards Working Groups
- **IEEE Brain Workshop on Advanced Neurotechnologies**
 - Established flagship event bridging scientists, engineers, and ethicists
- **New Products and Services**
 - Virtual Conferences and Summer Schools
 - Neurotech Entrepreneurs Workshop
 - Encyclopedia BRAIN
 - Neuroethics Framework and Guidelines
 - Hackathons/Competitions
 - Technology Roadmap/White Paper
 - Job Board

Portfolio of Assets & Monetization Opportunities

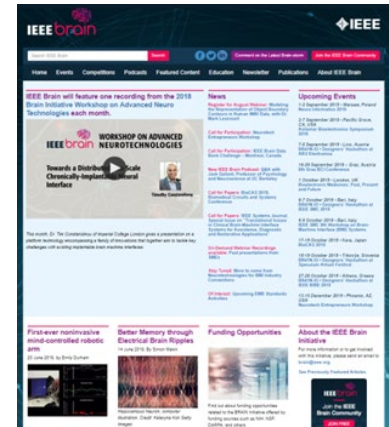
IEEE Brain Assets	Potential Revenue/Sponsorship
IEEE Brain Community	Paid Community Membership (esp. targeting non-members \$50/yr to join)
Webinars	Registration for live event is free; fees for on-demand recorded webinars
IEEE Brain Workshop on Advanced Neurotechnologies	Surplus from event and sponsorships to offset expenses; generate portal content from IEEE.tv recordings
NeuroTech for BMI Industry Connection + Standards	Augment existing OU conferences; standards sales and training opportunities
IEEE Brain Virtual Conferences	Minimal expenses to host; vary pricing models for live event vs on-demand version, and for brain members vs non-members
NeuroTech Entrepreneurs Workshop	Leverage entrepreneurship aspects to enhance existing OU conferences; cultivate industry relationships and sponsorships
Encyclopedia BRAIN	IEEE Brain receives 2% of Sales Revenue
Neuroethics Guidelines	Ancillary products (e.g., training materials, new workshop) + standards opportunities
Hackathons and Data Competitions	Augment existing OU conferences; target industry sponsorships (e.g. for prizes) to minimize expenses
Technology White Papers and Roadmaps	Ancillary products (e.g., Industry Summit)
Job Board	Continuous revenue stream from job postings and other products/services

Back-up

Branding & Infrastructure

Recognized and Established

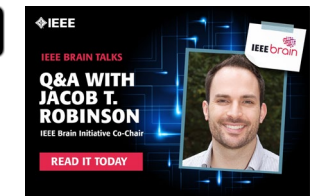
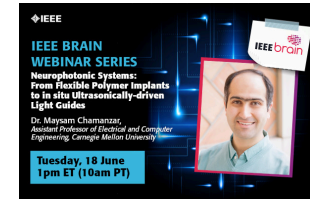
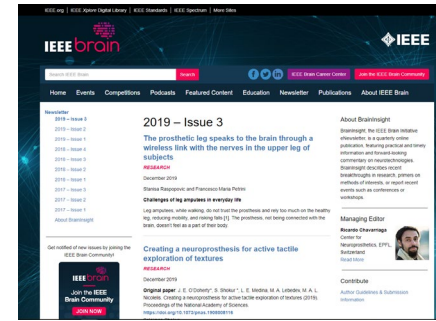
- IEEE Brain is a member of the [BRAIN Initiative Alliance \(BIA\)](#)
 - Recognized as the bridge to the engineering community that develops tools and technologies to advance the field of neuroscience
 - On equal footing with other BIA members such as NIH, NSF, FDA, Kavli Foundation, and Allen Institute for Brain Science
- Invited to participate in [International Brain Initiative \(IBI\)](#) activities
 - Contributing to Working Groups alongside other global BRAIN Initiatives
- Strong community
 - 4047 Technical Community members before 2021 renewal (currently at 1969 with over 100 paid members)
 - 2370 Facebook Likes
 - 4339 Twitter Followers
 - 7360 Collabratec Brain members
- IEEE Brain Portal, monthly page views 5120



Online Technical Presence

Active and Strong Growth

- [eNewsletter](#)
 - Launched 2017, 11 issues, 46 articles
 - Practical and forward-looking commentary on neurotechnologies
- [Webinar Series](#)
 - Launched Feb 2019, 7 webinars to date
 - Avg registrants: 125; attendees: 60
 - One-hour tutorial w/ Q&As
 - Available on-demand afterwards
- [Podcasts](#)
 - Leveraged from IEEE Brain events, 5-10 minutes long
 - Available on iTunes & Google Play & IEEE.TV
 - 3960 iTunes/Google Play Reach; 4933 IEEE.TV Views
- [Q&A Brain Talks](#)
 - Interviews with SMEs



IEEE Brain Workshop on Advanced Neurotechnologies

Surplus expected at this IEEE Brain flagship event

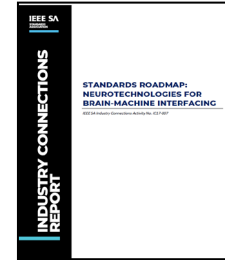
- Satellite event to Society for Neuroscience (SfN) Annual Meeting
 - Nov 1-2, 2018 in San Diego
 - Nov 9-10, 2017 in Washington D.C.
 - Nov 10-11, 2016 in San Diego
- 2020 event to be held Oct 22-23; [great program of speakers](#)
- Consistently 125-130 attendees with industry sponsorships
- Extend the IEEE brand to the neuroscience and neuroethics community
- Added an abstract/poster component in 2018 which was well received by the neuroscience community who prefers 1-pg submissions (not 4-page full papers)



Standards Activities

Augment existing conferences; standards sales and training opportunities

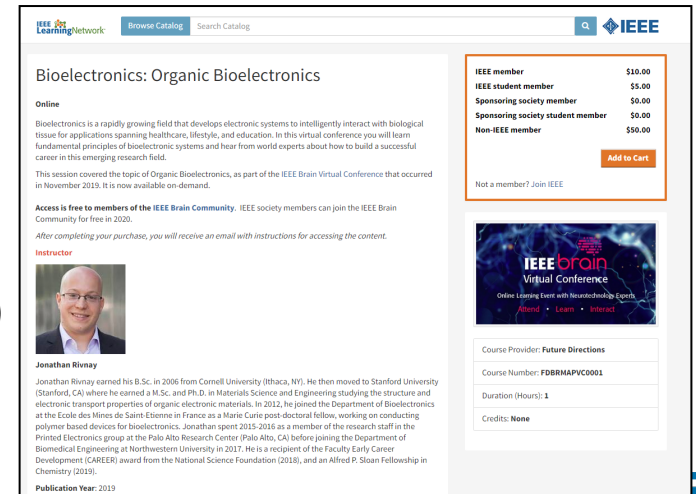
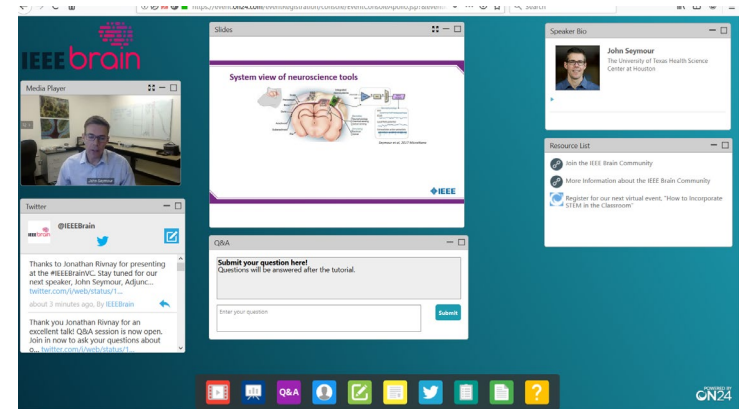
- [IEEE Industry Connections Group – Neurotech for Brain-Machine Interfaces \(BMI\)](#)
 - IEEE Neurotech Standards Roadmap, released for public comments (due Sept 30, 2020)
 - Connect with other organizations for comments (e.g., International Neuroinformatics Coordinating Facility, BCI Society, Brain Initiative Alliance)
 - Planning follow-up publications to include discussions not in the standards roadmap
- As an outgrowth of the IC Group, 2 Standards Working Group have been created and been active in developing standards
 - P2731 – Standard for a Unified Terminology for Brain-Computer Interfaces
 - P2794 – Standard for Reporting of in vivo Neural Interface Research
 - Working to expand WG membership, create subgroups, and outline documents



Virtual Conference Series

Minimal expenses to host with potential revenue stream for live events and on-demand recordings

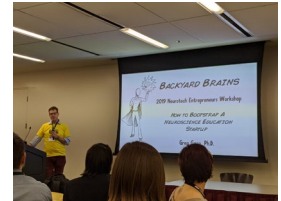
- First launched in Nov 2019, with a half day virtual conference on the emerging field of bioelectronics
- Collaboration between IEEE Educational Activities and Future Directions Digital Team to jointly host using the ON24 platform
 - Robust, interactive platform
- Educational + Professional Development
 - 3 tutorials, junior faculty panel, senior faculty panel
- Between 350-450 registrants for each of the 5 sessions
- Live conference was free as Enterprise Cart not yet integrated with ON24 platform (note: capability has been implemented now)
- [On-demand content available](#) (for a fee) on IEEE Learning Network (ILN)



Neurotech Entrepreneurs Workshop

Potential to leverage entrepreneurship elements to enhance existing OU conferences

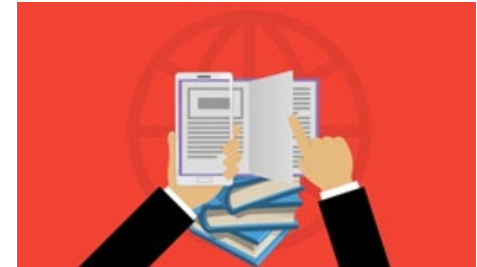
- Selected 30 graduate trainees from 7 countries immersed in a 2-day bootcamp in Dec'19
 - Commercialization of Academic Technology (IP, licensing, regulation)
 - Building your Business (funding, scaling, early/late stage)
 - Commercialization Pathways & Funding Opportunities (government, VC/angel funding)
 - Mentored breakout sessions w/ trainees applying lessons learned that led to a funding pitch at the end
- Great endorsement by speakers/mentors; ready and willing to help again
 - Paradromics, Backyard Brains, Platypus Institute, Nia Therapeutics, Abbott Neuromodulation
- Feedback from students unanimously positive; experience unique & training invaluable
- Sponsors interested in supporting future events
 - Facebook Reality Labs, IEEE Entrepreneurship, Blackrock Microsystems
- Great publicity generated with nicely written articles about the workshop
 - <https://fullcircle.asu.edu/fulton-schools/top-students-put-heads-together-at-asu-neurotech-workshop/>
 - <https://neurotechreports.com/pages/IEEE-neurotech-entrepreneurs-workshop-report.html>



Encyclopedia BRAIN

IEEE Brain to receive 2% of sales revenue

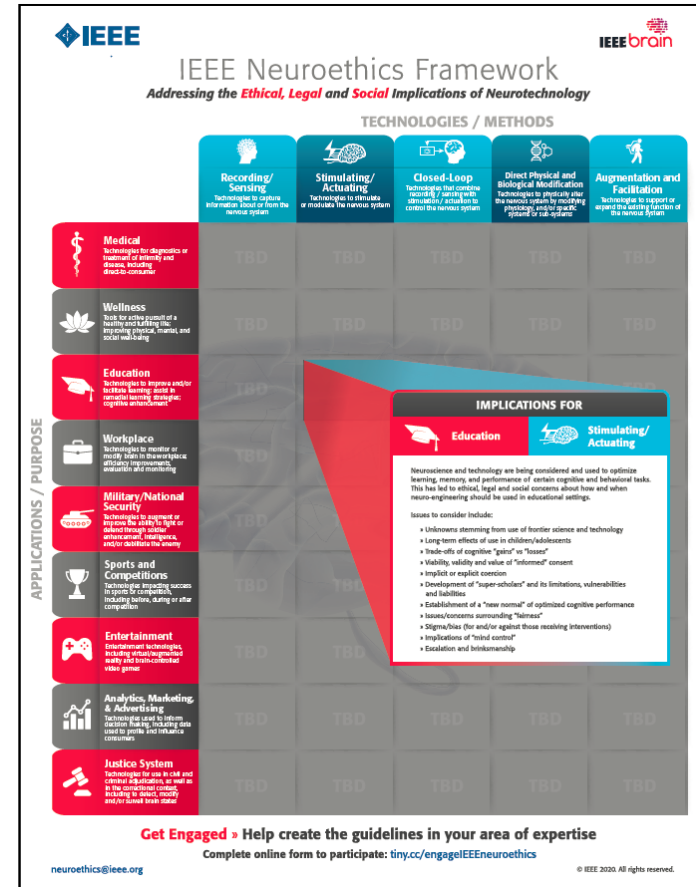
- Online eBook multi-media reference source in neural engineering
- Expect launch in 4Q21, with IEEE Brain receiving 2% of sales revenue
- Wiley-IEEE Press publishing partners
 - Wiley handles editing, production, distribution
 - IEEE provides reviews and technical content
- Area editors (diverse team) finalized
 - Signal Processing
 - Neural Computation
 - Cognitive
 - Neuromodulation
 - Bioelectronic Medicine
 - Neural Interface
 - BCI
 - Neuro-material
 - NeuroRehab
 - Translational



Neuroethics Framework

Potential revenue-generating ancillary products (e.g., training materials, standards, workshop)

- Launched 8 Application Working Groups
 - Members on the Neuroethics Subcommittee, who developed the framework, are serving as chairs of these Working Groups
 - Document template shared among all working groups to provide some consistencies during content development
- Request for comment on preliminary documents as early as possible for buy-in and add stakeholders
- Potential Collaboration
 - Possible joint session with the International Neuroethics Society
 - Exploring cross-pollination opportunities with IEEE Ethics in Action
- Goal is to highlight ethical, legal, and social (ELS) issues and provide resources for ethical research and use of neurotechnologies
 - Leading to standards, training materials, workshops



Hackathons and Competitions

Augment existing OU conferences and attract new attendees

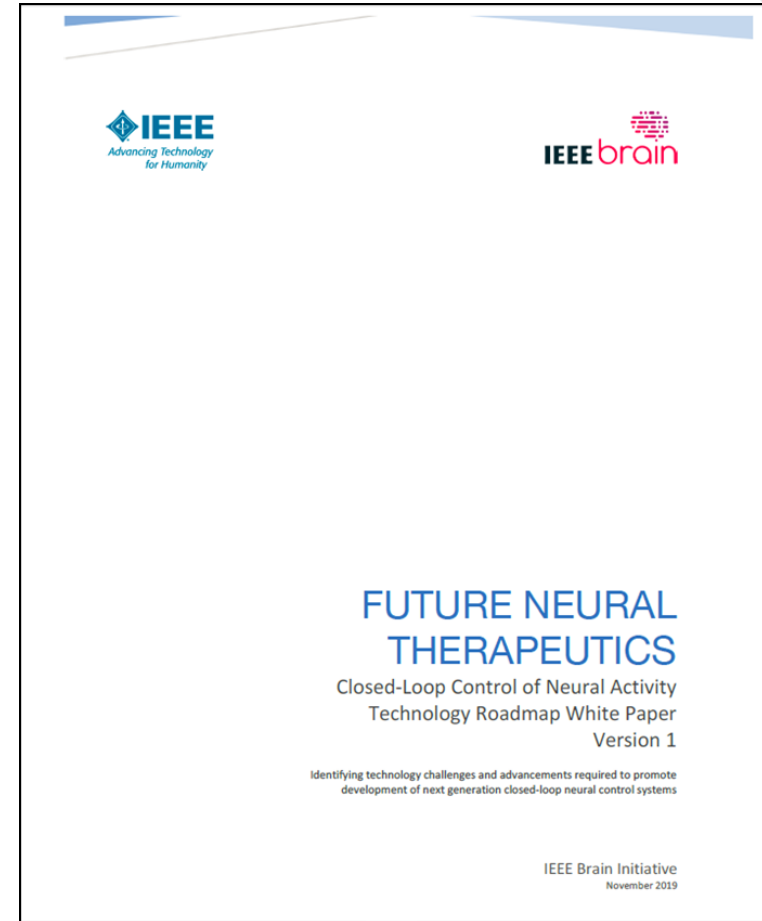
- [BCI/BMI hackathon series](#) with well defined projects organized by g.tec provide much visibility and content for IEEE Brain
- [Brain data challenges](#) encourage creative analytics on open source brain data
- Co-located with a conference
 - Add a unique dimension to the conference program
 - Bring new conference attendees
- 2020 hackathons and competitions moved to a virtual format



Technology Roadmap White Paper

Potential revenue-generating ancillary products
(e.g., industry summit)

- Roadmap white paper on next-generation closed-loop BMI technologies
- Provides a valuable resource for neuroscientists, clinicians and entrepreneurs on the state of the art in neurotechnology and brain-machine interface systems
 - Initial feedback shows WP serving as a much needed reference document in this technical area
- Presents IEEE Brain opportunities to engage with industry members
- Version 2 expected Nov 2020



IEEE Brain Job Board

Provides a service to job seekers in the community with revenue for IEEE Brain from companies' job postings and other services

The screenshot shows the IEEE Brain Job Board interface. At the top, there are navigation links for 'Employers', 'Job Seekers', and 'Sign-in or Create Account'. A search bar is present with the text 'Search for jobs' and a filter for '200 mi/320 km'. Below the search bar, there are 37 results. The first result is a 'Research Fellow' position at the University of Reading, United Kingdom, posted 11 days ago. The job details include a description, location, closing date (01/05/2020), job ID (53400992), and salary (£30,942 - £40,322 per annum). The job type is 'Full-Time' and the function is 'Research & Development'. There is an 'Apply Now' button next to the job listing.

The screenshot shows the 'Products / Pricing' page on the IEEE Brain Job Board. It features a navigation bar with 'Employers', 'Job Seekers', and 'Sign-in or Create Account'. Below the navigation bar, there are icons for home, search, and a 'POST A JOB' button. The main content area is titled 'Products / Pricing' and includes a sub-header: 'Below are the recruitment options we have available. When making your purchase, you have the option to pay online with a credit card or to be invoiced. If you have any questions, please contact Customer Service at 860-437-5700 or clientserv@yourmembership.com. Advertising Agencies: Please note that these prices are Net.' The page lists three job posting packages:

Package Name	Price	Duration
30 Day Job Posting	\$199.00	30 days
Job Flash™ Package	\$299.00	30 days
Premium Job Flash™ Package	\$349.00	30 days