



The 27th International Arab Conference on Information Technology

Sousse, Tunisia — 8–10 December 2026

Call for Prototype Challenge

Innovation Sprint: Pitch & Prototype Challenge (Transform Ideas into Impact, Special Edition) :

BrainAgentiction: Agentic AI for Comprehensive Brain Health & Neuro-Disorder Analysis from Multi-Modal Medical Data (Imaging, Clinical, Biomarkers, and Beyond)

As part of ACIT26, we are pleased to announce a transformative Innovation Sprint dedicated to one of the most ambitious frontiers in medical AI. Participants will develop intelligent systems that detect, characterize, classify and reason across a spectrum of brain conditions — just as clinicians do in real practice.

Systems may be trained on any relevant medical data (imaging, clinical, biomarkers, EEG). All systems are evaluated on the same blinded 3D brain MRI benchmark, so that results are directly comparable. The best systems will be combined and analyzed in a joint challenge paper, co-authored by the top teams and submitted to a leading medical imaging journal.

Allowed AI techniques

Participants may use any advanced AI technique: Deep Learning (CNNs, UNet), Transformers (ViT, Swin, Medical Transformer), Large Language Models, Agentic AI (multi-agent systems, orchestration, RAG, verification), Ensemble Methods and Hybrid Architectures.

The focus is on clinical impact, reasoning and explainability, not on forcing specific techniques. Pre-trained and foundation models are allowed if declared.

Covered brain conditions

Category	Conditions	Reference public data
Brain tumors	Glioma (including glioblastoma), Meningioma, Metastasis	BraTS 2024 Figshare
Neurodegenerative	Alzheimer's disease (incl. MCI) Parkinson's disease	OASIS, ADNI PPMI

Category	Conditions	Reference public data
Neurodevelopmental	Autism Spectrum Disorder	ABIDE I/II

Healthy controls are part of the benchmark. Pituitary adenoma data (2D) may be used for pre-training only. Cerebral palsy, spinal-cord-injury-related brain changes, ADHD and dyslexia are out of the ranked scope for this edition, as no suitable public 3D MRI benchmark is listed; teams may present them in the exploratory track with declared data. Participants may focus on one or several categories; multi-disease systems compete for the main prize.

Challenge tasks — one pipeline

Each system implements the four tasks as one chain, each task using the previous outputs, controlled by a verification component.

Task	Description	Output
A. Detection	Abnormal vs. normal brain	detection.json: flag + calibrated probability
B. Spatial characterization	Lesional conditions: 3D mask per pathology. Non-lesional conditions: regional volumetry + explanation map	mask.nii.gz or morpho.json + saliency map
C. Classification	Closed label set: Normal, Glioma, Meningioma, Metastasis, Alzheimer's, FCD epilepsy, Post-stroke lesion, Parkinson's, ASD, Uncertain/Other	classification.json: probability per class
D. Clinical reasoning	Structured report; every finding cites its evidence from A–C (volume, atlas location, probability)	report.json (fixed schema) + summary ≤ 200 words

What success looks like

- **Accurate** — high Dice, F1 and AUROC across target conditions
- **Explainable** — evidence-linked reasoning and calibrated confidence scores
- **Generalizable** — handles multiple disease categories and unseen scanners
- **Efficient** — runs within the clinical constraints above
- **Deployable** — containerized, offline and reproducible

Participation format

Teams of 2 to 4 members will:

1. Develop an AI solution using any advanced technique(s)

2. Submit a containerized prototype for blind testing on a hidden MRI dataset
3. Present their solution through a live pitch session at the conference
4. Demonstrate a live run on a never-before-seen MRI case
5. Answer questions from a multidisciplinary jury (AI + clinical + entrepreneurial)

Evaluation criteria (weighted)

Component	Weight	Metrics
A. Detection	15%	AUROC, sensitivity at 90% specificity, expected calibration error
B. Spatial characterization	20%	Tumors: lesion-wise Dice and HD95 per sub-region of each tumor type; FCD: lesion-wise detection rate; stroke: Dice + lesion count
C. Classification	20%	Macro-F1, balanced accuracy, per-class AUROC, calibration
D. Report (automatic)	10%	Schema validity, share of evidence-supported statements, contradiction rate with A–C
Efficiency	5%	Time per case, GPU memory, failure rate
Clinical relevance & explainability	10%	Output interpretability, confidence scores, clinical usability
Technical quality & innovation	10%	Architecture, agentic verification, reproducibility
Pitch & live demonstration	10%	Clarity, robustness on the unseen case Inference time

Bonus (up to +5%): coverage of ≥ 3 core categories; measured hallucination rate below the published threshold; inference < 60 seconds per case; well-calibrated uncertainty.

Allowed technologies (non-exhaustive)

Paradigm	Examples
Deep Learning (CNNs)	nnU-Net, DeepLab, ResNet, UNet variants
Transformers	ViT, Swin UNETR, Medical Transformer
Hybrid	CNN-Transformer, multi-modal fusion
Ensemble	Model stacking, voting, uncertainty averaging
Agentic AI	AutoGen, CrewAI, LangGraph, local LLM + tool-calling + RAG + verification
Explainability	Grad-CAM, attention rollout, SHAP

Pure LLM-only solutions with no vision component will not be accepted. Agentic solutions must demonstrate explicit, measurable hallucination mitigation.

Ethical & responsible AI (mandatory)

All submissions must demonstrate:

- explainability (why the model decided),
- uncertainty estimation (calibrated confidence for each prediction),
- privacy preservation (no patient data retention,
- no external API calls) and
- fairness awareness (performance stratified by sex, age and site).

Agentic submissions must also include:

- a hallucination detection mechanism,
- a verification agent or cross-checking, and
- a traceable reasoning chain.

Data policy

Source	Conditions	Modalities
BraTS 2024	Glioma, Metastasis, Meningioma	MRI
OASIS / ADNI	Alzheimer's, MCI, controls	MRI + clinical
PPMI	Parkinson's	MRI + clinical + biomarkers
ABIDE I/II	Autism	MRI + clinical
Figshare brain tumors	Tumors incl. pituitary	MRI

Public datasets are available now from their providers; teams should request licensed data immediately after registration.

Awards & recognition

Prize	Award	Recognition
1st Prize — Best Overall AI System (Multi-disease)	As soon	Spotlight oral + certificate
2nd Prize — Best Technical Innovation	As soon	certificate
3rd Prize — Audience Award	As soon	certificate

All finalists receive certificates of excellence, networking with clinicians and AI industry partners, visibility in ACIT26 proceedings, potential incubation support

Important dates

Milestone	Date
Registration, team formation and Abstract submission	15 October 2026
Prototype Submission	30 October 2026
Notification of Finalists	15 November 2026
Registration Fee Payment	22 November 2026
Live Pitch & Demo (at the Conference)	9 December 2026

Live demonstration (at the conference)

10-minute pitch, 5-minute live demo, 5-minute Q&A. Offline mode required. The demo case is chosen by the jury from the reserved benchmark.

Jury panel

AI researchers (deep learning, transformers, agentic systems); radiologists, neurologists or oncologists (clinical validation); healthtech entrepreneurs; AI ethics experts.

Why participate?

- Tackle a real clinical problem with any advanced AI technique.
- Benchmark against CNNs, Transformers, Ensembles and Agentic systems on a common blinded test.
- Gain visibility at a major international conference.
- Receive direct feedback from clinicians and AI experts.
- Potential for publication, incubation, and industry partnerships

Join the Innovation Sprint — BrainAgentichthon Challenge

For inquiries: brainagentichthon@gmail.com

Submission form: <https://bit.ly/BrainAgentichthon2026>



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