






















sEEG-Suite: An Interactive Pipeline for Semi-Automated Contact Localization and Anatomical Labeling with Brainstorm

Chinmay Chinara ^{1*}, Raymundo Cassani ^{2*}, Takfarinas Medani ¹, Anand A. Joshi ¹, Samuel Medina Villalon ^{3,7}, Yash S. Vakilna ^{4,6}, Johnson P. Hampson ⁴, Kenneth Taylor ⁵, Francois Tadel ⁸, Dileep Nair ⁵, Christian G. Bénar ³, Sylvain Baillet ², John C. Mosher ⁴, and Richard M. Leahy ¹

1 University of Southern California, Los Angeles, United States of America **2** McGill University, Montreal, Canada **3** Aix-Marseille Université, INSERM, Institut de Neurosciences des Systèmes, Marseille, France **4** University of Texas Health Science Center at Houston, United States of America **5** Cleveland Clinic, Ohio, United States of America **6** Rice University, Houston, United States of America **7** APHM, Timone Hospital, Epileptology and Cerebral Rhythmology Department, Marseille, France **8** Independent Research Engineer, France  Corresponding author * These authors contributed equally.

DOI: [10.21105/joss.10490](https://doi.org/10.21105/joss.10490)

Software

- [Review](#) 
- [Repository](#) 
- [Archive](#) 

Editor: [Kevin M. Moerman](#)  

Reviewers:

- [@alexrockhill](#)
- [@vahid-sb](#)

Submitted: 16 September 2025

Published: 04 June 2026

License

Authors of papers retain copyright and release the work under a Creative Commons Attribution 4.0 International License ([CC BY 4.0](https://creativecommons.org/licenses/by/4.0/)).

Summary

Stereoelectroencephalography (sEEG) is a critical tool for mapping epileptic networks in patients with drug-resistant epilepsy. Accurate localization and labeling of sEEG contacts are essential for identifying the seizure onset zone (SOZ) and ensuring optimal resective surgery. Traditional methods for localizing and labeling sEEG contacts rely on manual processing, which is prone to human error and variability. To address these challenges, we developed and integrated a semi-automatic sEEG contact localization and labeling pipeline within Brainstorm ([Tadel et al., 2011](#)), an open-source software platform for multimodal brain imaging analysis ([Delaire et al., 2025](#); [Medani et al., 2023](#); [Nasiotis et al., 2019](#); [Niso et al., 2019](#); [Silva Castanheira et al., 2021](#); [Tadel et al., 2019](#); [Vakilna et al., 2025](#)), widely adopted in the neuroscience community with [over 50,000 registered users](#) with an active online [user forum](#). The software has been [supported](#) by the National Institute of Health (NIH) for over two decades. The pipeline presented in this paper performs: (1) import and apply rigid co-registration of post-implantation Computed Tomography (CT) or post-CT with pre-implantation Magnetic Resonance Imaging (pre-MRI), (2) post-CT image segmentation and semi-automatic detection of sEEG contacts using GARDEL ([Medina Villalon et al., 2018](#)), which has been integrated as a [Brainstorm plugin](#), and (3) automatic anatomical labeling of contacts using standard and commonly used [brain anatomy templates and atlases](#). Integrating this pipeline into Brainstorm brings the best of both worlds: GARDEL's automation and Brainstorm's multimodal data compatibility, and rich library of visualization and advanced analysis tools at both sensor and source level ([Vakilna et al., 2025](#)). This sEEG-Suite tool facilitates reproducible research, supports clinical workflows, and accelerates sEEG-based investigations of invasive brain recordings.

Statement of Need

Intracranial electrode localization, particularly for sEEG, is a foundational step in epilepsy surgery planning and neuroscience research. Many researchers and clinicians rely on manual workflows or a patchwork of separate tools for localization, which results in time-consuming

procedures, inter-operator variability, and fragmented pipelines. Manual identification and labeling of electrode contacts can take several hours per subject, slowing down the workflows, while subjective differences between operators introduce inconsistencies in results. Moreover, existing practices often require multiple platforms, i.e., one for CT-MRI co-registration, another for electrode detection, another for anatomical labeling, and another for data analysis, thereby adding unnecessary complexity and risk of errors in the final results.

Integrating GARDEL with Brainstorm provides seamless, one-click deployment of intracranial electrode localization directly within Brainstorm, eliminating the need for external scripts and reducing manual intervention. This reduces localization time from hours to minutes (with some minor post-processing), enabling researchers to efficiently scale analyses across larger patient cohorts. The integration also enhances reproducibility by standardizing detection parameters, minimizing manual intervention, and unifying the entire workflow of localization and labeling with the advanced analysis of electrophysiological data into a single interactive environment.

State of the Field

Over the past decade, several tools have been developed to accelerate intracranial electrode localization and labeling. DEETO (Arnulfo et al., 2015) introduced automated CT-based segmentation of deep electrodes, but depended on planned entry and target points, making it less robust when implanted trajectories deviated from the plan. SEEG Assistant (Narizzano et al., 2017) extended this approach within 3D Slicer for trajectory analysis and contact segmentation, but likewise required prior trajectory information and operated mainly as a standalone tool. GARDEL (Medina Villalon et al., 2018), released with EpiTools, further advanced automation by localizing SEEG contacts, assigning anatomical labels, and supporting 3D visualization, yet remained separate from electrophysiology analysis workflows. FASCILE (Ervin et al., 2021) and LeGUI (Davis et al., 2021) further reduced manual effort in contact identification, labeling, and anatomical localization, but remained focused on preprocessing. MNE-Python (Rockhill et al., 2022) later added CT-MR alignment, GUI-based contact marking, template-space warping, and visualization within a broader analysis environment, though localization was still largely user-guided. iEEG-recon's (Lucas et al., 2024) expanded reconstruction with semi-automatic labeling, CT-MRI registration, atlas-based assignment, and quality control, while seegloc (Wong et al., 2024) provided a largely automated pipeline for coregistration, contact detection, trajectory clustering, and atlas-based labeling. More recent work by (Chen et al., 2026) improved robustness under practical clinical conditions, but remained centered on localization and labeling. As a result, outputs from these tools are still often transferred into separate platforms for visualization and electrophysiological analysis.

sEEG-suite makes a distinct scholarly contribution by integrating and extending the GARDEL workflow directly within Brainstorm. It combines CT-MRI co-registration, skull stripping, automatic contact detection with live visualization, interactive refinement, atlas-based labeling, and direct linkage of contacts to recordings for downstream analysis within a single environment. This end-to-end workflow reduces fragmentation and import/export-related errors, allowing electrode definitions to move directly into analysis without additional tools.

Software Design

sEEG-suite was built to keep the localization workflow within Brainstorm, a dedicated software for the neuroscience community, rather than spreading it across multiple tools. To support this, GARDEL (Medina Villalon, 2024) is integrated as a Brainstorm plugin, allowing users to run automated contact detection directly from the Brainstorm interface. This also simplifies installation and updates, without requiring changes to Brainstorm's core codebase or data structures, and it works across the major operating systems.

The workflow follows a semi-automatic approach. GARDEL detects candidate contacts in

high-density CT, groups them into electrodes, and orders them along each trajectory (with the deepest contact first). Users retain control over steps that require clinical context and judgment, such as validating results against the implantation scheme, renaming electrodes to match local conventions, and correcting missed or incorrect detections using Brainstorm's interactive editing tools. Brainstorm's 2D/3D views make it easy to visually confirm the results and make edits quickly.

Research Impact Statement

Manual contact identification and labeling can require hours per subject, especially for large implantations, limiting throughput in both clinical research and cohort-scale studies. sEEG-suite reduces localization time while preserving expert oversight via interactive correction. By running the full workflow in a single environment, sEEG-suite reduces export/import overhead and helps prevent common issues such as inconsistent naming, transcription errors, and untracked parameter changes.

The integration's impact is amplified by Brainstorm's existing ecosystem with more than 55k registered users, which supports multimodal electrophysiology analysis and reproducible pipelines through GUI and scripting. The sEEG-Suite is already adopted by our close collaborators, including UTH Texas, Cleveland Clinic, INSERM Marseille, and other Brainstorm users ([Brainstorm training](#)). Importantly, large-scale validation of atlas-based labeling methods, closely aligned with the labeling step supported in Brainstorm, has demonstrated strong agreement with clinical labeling and reduced likelihood of gross anatomical error ([Taylor et al., 2021](#)). Together, these factors position sEEG-suite as a community-ready tool for reproducible, end-to-end sEEG workflows from anatomy through electrophysiological analysis.

Software Description and Workflow

[Figure 1](#) illustrates the complete end-to-end workflow for sEEG analysis in Brainstorm. The process begins with the acquisition of anatomical and implantation imaging, including both pre- and post-MRI and post-CT scans. The CT image is rigidly co-registered to the MRI to ensure alignment of anatomical and electrode information, after which skull stripping is applied to remove non-brain structures and CT artifacts. From the CT, an intensity thresholded isosurface is generated to identify candidate electrode contacts that will be used during the localization process. At this stage, Brainstorm offers two localization strategies: a manual interface that allows users to add/remove/merge/rename electrodes and add/remove contacts, and an automated localization procedure using GARDEL, which streamlines contact detection and reduces the need for extensive manual intervention. Once preliminary electrode positions are obtained, users can refine and correct them to generate a finalized set of electrode coordinates. These coordinates are then subjected to automated anatomical labeling, in which each contact is mapped to underlying cortical and subcortical structures based on atlas information derived from the MRI segmentation or provided from the different atlases available in Brainstorm. The localized and labeled electrode contacts can further be linked to the raw electrophysiological recordings, enabling Brainstorm to integrate anatomy with the corresponding time series data.

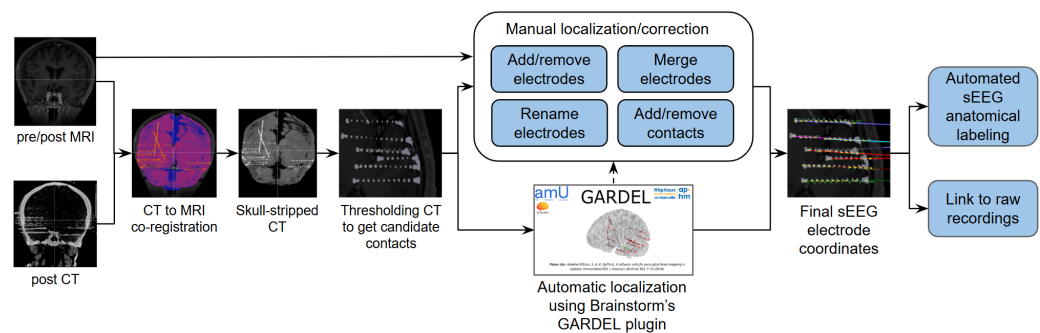


Figure 1: End-to-end flowchart for sEEG analysis in Brainstorm.

Anatomy and preprocessing: pre-MRI (Figure 2a) and post-CT (Figure 2b) scans are acquired for each subject. The post-CT volume is co-registered with the pre-MRI volume using the Statistical Parametric Mapping (SPM) or USC's CT2MRI (available as a Brainstorm plugin) (Figure 2c). The pre-MRI serves as an anatomically grounded reference for subsequent processing. Specifically, the pre-MRI is used to perform skull-stripping of the post-CT using tissue segmentation obtained either by BrainSuite (Shattuck & Leahy, 2002) or SPM (Friston et al., 1994) (using function `mri_skullstrip.m`), effectively removing extracranial tissues and eliminating artifacts associated with the sEEG electrode wire bundles (Figure 2d). The resulting artifact-free post-CT volume is then subjected to an automatic intensity thresholding to detect and extract metal artifacts which are potential candidates for electrode contact localization (Figure 2e). More details can be found in the tutorial: [CT to MRI co-registration](#).

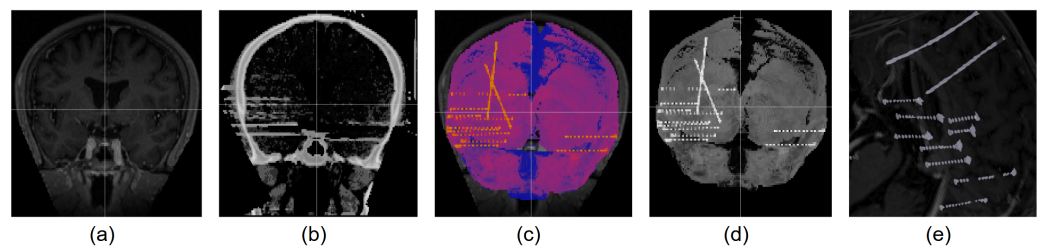


Figure 2: (a) pre-MRI; (b) post-CT; (c) post-CT co-registered to pre-MRI and skull-stripped using SPM (the colored image is the post-CT overlaid on the pre-MRI to show their proper alignment); (d) Skull-stripped post-CT by itself; (e) Isosurface generated from skull-stripped post-CT using intensity thresholding to capture metal artifacts as candidate contacts.

Manual contact localization: Prior to localizing the electrode contacts, knowledge of the implantation scheme is required in order to have the correct naming convention (used by the center/neurosurgeons) for the various electrodes used. Brainstorm's iEEG graphical panel allows creating an electrode implantation manually by first defining the electrode model and constructor (through a list of predefined uniformly spaced electrode models from various constructors, such as DIXI, PMT, etc, or users can choose to define and load their own model). The user can then set the electrode tip and skull entry to render the electrode (Figure 3). This process can be done in the 3D space (using the intensity thresholded mesh generated in the previous section), in the 2D MRI viewer (using the intensity thresholded post-CT overlaid on the pre-MRI), or only on post-MRI if the CT is not available. More details can be found in the tutorial: [sEEG contact localization and labeling](#).

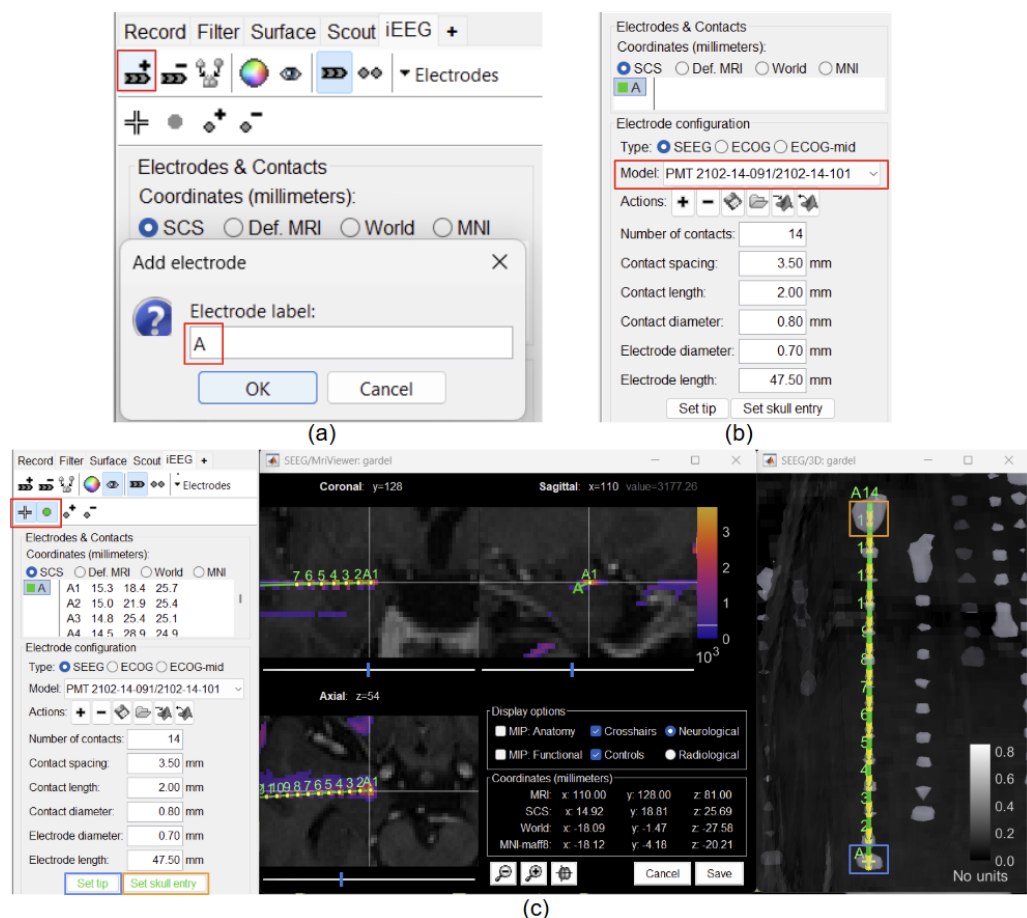


Figure 3: (a) Create an electrode and assign label to it (in red); (b) Define the electrode model (in red); (c) On the 3D figure (SEEG/3D: gardel), set the electrode tip (in blue) and skull entry (in orange) using the surface selection button (in red) to render the electrode both in 2D MRI viewer and 3D figure.

Automatic contact localization: With the click of a single button inside Brainstorm (Figure 4), we have live, interactive visualization of the detection process, enabling users to observe contact identification, grouping, and ordering in real time. The electrode names are automatically assigned from **A-Z**, **AA-ZZ**, etc. in the order they are detected, which can be renamed as desired during post-processing (Figure 5). On the button click, GARDEL uses the skull-stripped post-CT volume along with the intensity threshold to identify high-density regions corresponding to metallic artifacts that are considered as electrode contacts. These detected points are grouped into individual leads, with contacts sorted along each electrode trajectory, designating the deepest contact as the first in sequence. This integration reduces the need for manual contact detection and electrode indexing, significantly streamlining the localization workflow. More details can be found in the tutorial: [Automatic SEEG Contact Localization using GARDEL](#).

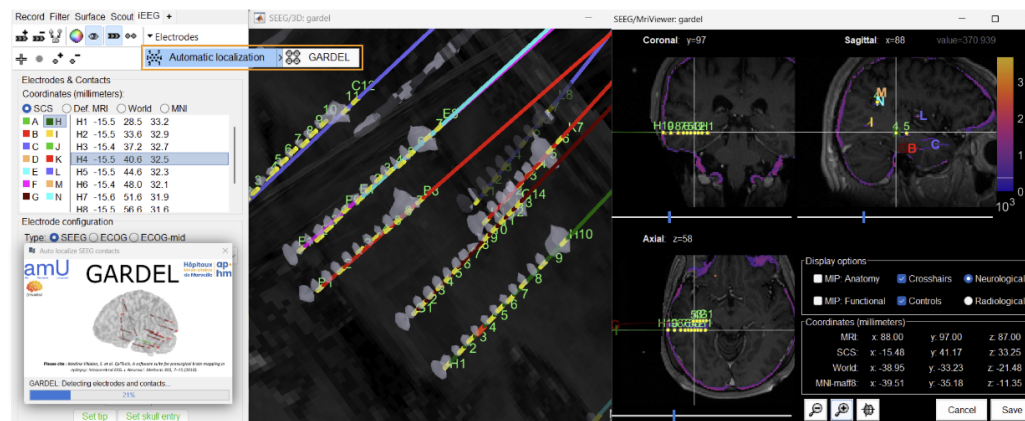


Figure 4: The Brainstorm interface displaying the automatically detected contacts, with the GARDEL button (in orange) that triggers the automatic detection.

Post-processing of the electrodes/contacts: All the necessary post-processing can be done using the Brainstorm interface interactively. If there is a wrongly detected electrode, we can delete and manually rectify it by creating it from scratch (as mentioned in the **Manual contact localization** section above) along with renaming them if needed (Figure 5). There could be cases where a single electrode may be detected as multiple in which case we need to merge them as one (Figure 6). We also allow fine-tuning at the contact level, where we can remove (Figure 7) or add (Figure 8) them. On doing any of the editing operations, it is also ensured that the ordering of the contacts is maintained with the deepest contact as first in the sequence. More details can be found in the tutorial section: [Edit the contacts positions](#).

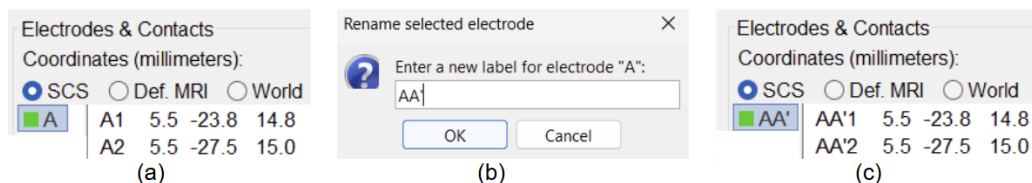


Figure 5: Renaming electrode (a) Electrode **A** before renaming; (b) Brainstorm interface to rename the electrode (double click on electrode **A** and change name to **AA'**); (c) Electrode **A** renamed to **AA'** (along with all the contacts).

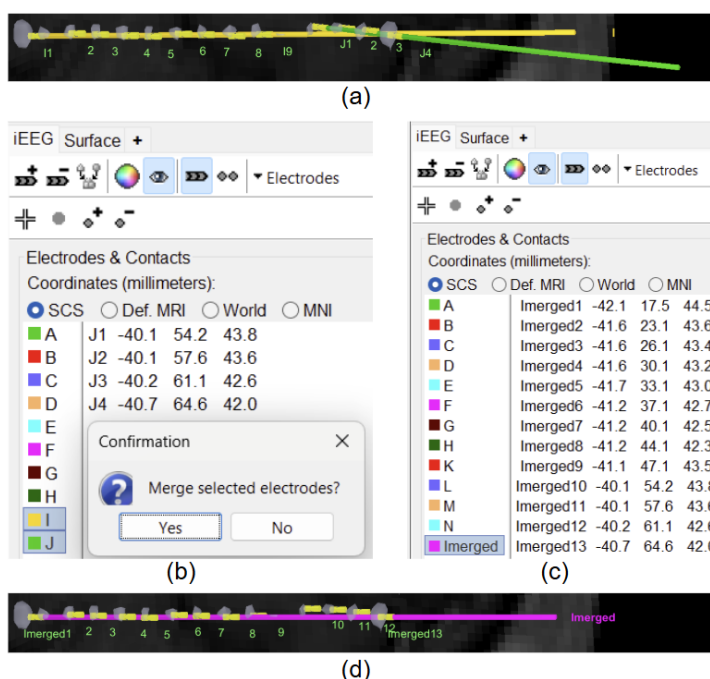


Figure 6: Merging electrodes using the Brainstorm iEEG panel; (a) Electrodes I and J are wrongly detected as separate electrodes; (b) Brainstorm interface showing option for merging them; (c) The merged electrode in iEEG panel (I and J get replaced by Imerged); (d) The rendered merged electrode.

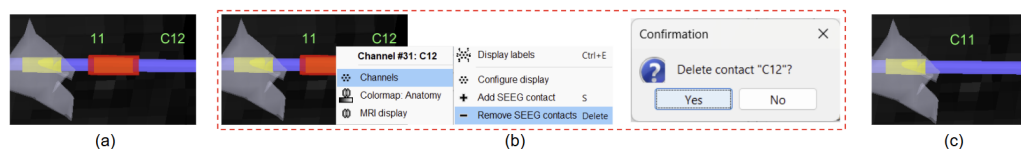


Figure 7: Removing a contact using 3D figure; (a) Wrongly detected contact (selected contact C12 in red); (b) Brainstorm interface showing option for removing it (right click on the C12 contact to get this menu); (c) Contact removed.

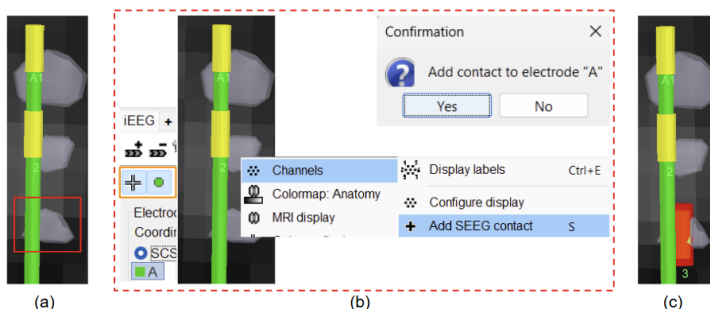


Figure 8: Adding a contact using 3D figure; (a) Missed detecting contact (3rd from top for electrode A in red); (b) Brainstorm interface showing option for adding it (turn on surface/centroid selection and select electrode A in iEEG panel, select the surface point and right click on it to get this menu); (c) Missing contact A3 added.

Automated anatomical labeling: Brainstorm supports multiple standardized [brain anatomy templates](#) (ICBM152, Colin27, USCBrain, FsAverage, etc.) and [brain atlases](#) (AAL, Desikan-Killiany, Brainetome, Schaefer, etc.), all of which can be added from the interface as shown in

Figure 9(a-b). The spatial coordinates of contacts localized by the steps above are automatically cross-referenced against these atlases, resulting in detailed anatomical labels (e.g., specific cortical gyri, subcortical nuclei) as shown in Figure 9(c-d). This enriched labeling framework provides a comprehensive anatomical context for each contact (the region of the brain the contact belongs to), facilitating both clinical interpretation and research analyses. More details can be found in the tutorial section on [anatomical labeling](#). Work by (Taylor et al., 2021) demonstrates a clinical validation study using this feature of Brainstorm.

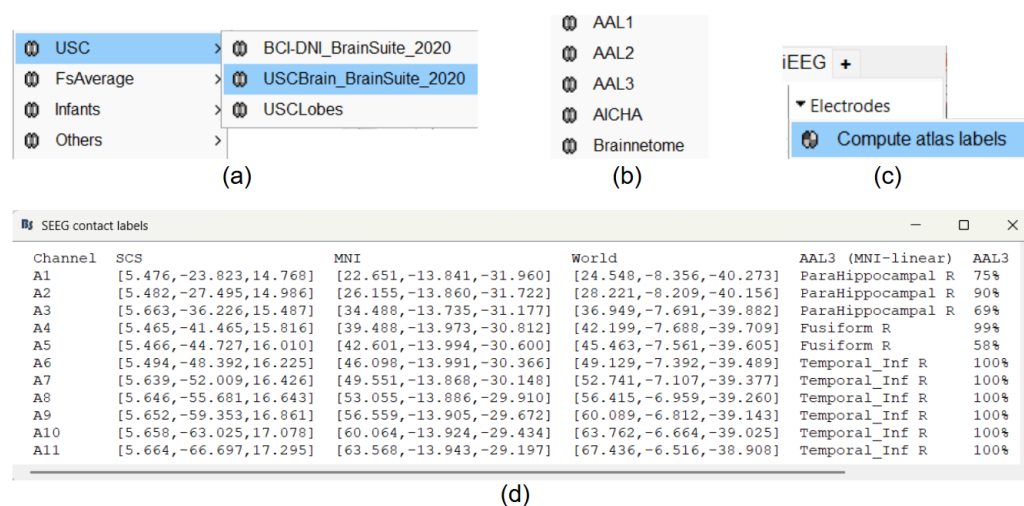


Figure 9: (a) The different brain anatomy templates supported inside Brainstorm; (b) The different brain atlases supported inside Brainstorm; (c) Brainstorm interface to compute the anatomical labeling (in the iEEG panel select the electrode **A**, go to *Electrodes* > *Compute atlas labels*); (d) The computed anatomical labels for contacts in electrode **A** using the AAL3 atlas.

Link to raw recordings: Once the sEEG contacts have been localized, we can associate them with the corresponding raw electrophysiological recordings. This link ensures that anatomical localization can be directly tied to the recorded brain signals. To establish this connection, it is essential that the contact names match exactly with the channel names in the raw recordings. Any mismatch (such as differences in naming conventions, capitalization, or numbering) will prevent Brainstorm from aligning the contacts with the appropriate channels. Detailed instructions on how to perform this linking can be found in the tutorial section: [Access the recordings](#). Following these guidelines ensures that each localized contact is correctly mapped to its electrophysiological data, allowing for reliable analysis and visualization. Once this step is completed, users can proceed either with the sEEG data analysis within Brainstorm using its [rich and complete set of tools](#) or export the final data into any of the [supported formats](#) for analysis with other software.

Tutorials and Documentation

Brainstorm offers a comprehensive collection of [detailed tutorials](#) that cover all major components of the platform, supporting users from basic data processing to advanced multimodal analyses. Within this ecosystem, the sEEG-suite is accompanied by its own dedicated tutorials, with each section of the suite linking to a corresponding resource. For convenience, the complete set of tutorials for stereo-electroencephalography (sEEG) analysis can be accessed here: [sEEG-suite: Stereo-electroencephalography \(sEEG\) Analysis](#).

AI Usage Disclosure

AI tools were used to assist with editing and restructuring of the manuscript. The authors verified all technical descriptions and claims before submission.

Acknowledgements

Research reported in this publication was supported by the National Institute of Biomedical Imaging and Bioengineering (NIBIB) of the National Institutes of Health (NIH) under award R01EB026299, the National Institute of Neurological Disorders and Stroke (NINDS) of the NIH under award RF1NS133972, and the Congressionally Directed Medical Research Programs (CDMRP) of the U.S. Department of Defense (DoD) under award HT9425-23-1-0149.

References

- Arnulfo, G., Narizzano, M., Cardinale, F., Fato, M. M., & Palva, J. M. (2015). Automatic segmentation of deep intracerebral electrodes in computed tomography scans. *BMC Bioinformatics*, *16*(1), 99. <https://doi.org/10.1186/s12859-015-0511-6>
- Chen, C., Zhang, L., & Tong, P. F. (2026). Fully automated and noise-robust SEEG electrode localization under practical clinical conditions. *bioRxiv*. <https://doi.org/10.64898/2026.02.12.705628>
- Davis, T. S., Caston, R. M., Philip, B., Charlebois, C. M., Anderson, D. N., Weaver, K. E., Smith, E. H., & Rolston, J. D. (2021). LeGUI: A fast and accurate graphical user interface for automated detection and anatomical localization of intracranial electrodes. *Front. Neurosci.*, *15*, 769872. <https://doi.org/10.3389/fnins.2021.769872>
- Delaire, É., Vincent, T., Cai, Z., Machado, A., Hugueville, L., Schwartz, D., Tadel, F., Cassani, R., Bherer, L., Lina, J.-M., Pélégrini-Issac, M., & Grova, C. (2025). NIRSTORM: A brainstorm extension dedicated to functional near-infrared spectroscopy data analysis, advanced 3D reconstructions, and optimal probe design. *Neurophotonics*, *12*(2), 025011. <https://doi.org/10.1117/1.NPh.12.2.025011>
- Ervin, B., Rozhkov, L., Buroker, J., Leach, J. L., Mangano, F. T., Greiner, H. M., Holland, K. D., & Arya, R. (2021). Fast automated stereo-EEG electrode contact identification and labeling ensemble. *Stereotact. Funct. Neurosurg.*, *99*(5), 393–404. <https://doi.org/10.1159/000515090>
- Friston, K. J., Holmes, A. P., Worsley, K. J., Poline, J.-P., Frith, C. D., & Frackowiak, R. S. J. (1994). Statistical parametric maps in functional imaging: A general linear approach. *Hum. Brain Mapp.*, *2*(4), 189–210. <https://doi.org/10.1002/hbm.460020402>
- Lucas, A., Scheid, B. H., Pattnaik, A. R., Gallagher, R., Mojena, M., Tranquille, A., Prager, B., Gleichgerrcht, E., Gong, R., Litt, B., Davis, K. A., Das, S., Stein, J. M., & Sinha, N. (2024). iEEG-recon: A fast and scalable pipeline for accurate reconstruction of intracranial electrodes and implantable devices. *Epilepsia*, *65*(3), 817–829. <https://doi.org/10.1111/epi.17863>
- Medani, T., Garcia-Prieto, J., Tadel, F., Antonakakis, M., Erdbrügger, T., Höltershinken, M., Mead, W., Schrader, S., Joshi, A., Engwer, C., Wolters, C. H., Mosher, J. C., & Leahy, R. M. (2023). Brainstorm-DUNEuro: An integrated and user-friendly finite element method for modeling electromagnetic brain activity. *NeuroImage*, *267*, 119851. <https://doi.org/10.1016/j.neuroimage.2022.119851>
- Medina Villalon, S. (2024). GARDEL. In *GitLab repository*. GitLab. https://gitlab-dynamap.timone.univ-amu.fr/public_shared_tools/gardel/-/tree/GARDEL_Brainstorm
- Medina Villalon, S., Paz, R., Roehri, N., Lagarde, S., Pizzo, F., Colombet, B., Bartolomei,

- F., Carron, R., & Bénar, C.-G. (2018). EpiTools, a software suite for presurgical brain mapping in epilepsy: Intracerebral EEG. *J. Neurosci. Methods*, *303*, 7–15. <https://doi.org/10.1016/j.jneumeth.2018.03.018>
- Narizzano, M., Arnulfo, G., Ricci, S., Toselli, B., Tisdall, M., Canessa, A., Fato, M. M., & Cardinale, F. (2017). SEEG assistant: A 3DSlicer extension to support epilepsy surgery. *BMC Bioinformatics*, *18*(1), 124. <https://doi.org/10.1186/s12859-017-1545-8>
- Nasiotis, K., Cousineau, M., Tadel, F., Peyrache, A., Leahy, R. M., Pack, C. C., & Baillet, S. (2019). Integrated open-source software for multiscale electrophysiology. *Sci. Data*, *6*(1), 231. <https://doi.org/10.1038/s41597-019-0242-z>
- Niso, G., Tadel, F., Bock, E., Cousineau, M., Santos, A., & Baillet, S. (2019). Brainstorm pipeline analysis of resting-state data from the open MEG archive. *Front. Neurosci.*, *13*, 284. <https://doi.org/10.3389/fnins.2019.00284>
- Rockhill, A. P., Larson, E., Stedelin, B., Mantovani, A., Raslan, A. M., Gramfort, A., & Swann, N. C. (2022). Intracranial electrode location and analysis in MNE-Python. *Journal of Open Source Software*, *7*(70), 3897. <https://doi.org/10.21105/joss.03897>
- Shattuck, D. W., & Leahy, R. M. (2002). BrainSuite: An automated cortical surface identification tool. *Med. Image Anal.*, *6*(2), 129–142. [https://doi.org/10.1016/S1361-8415\(02\)00054-3](https://doi.org/10.1016/S1361-8415(02)00054-3)
- Silva Castanheira, J. da, Orozco Perez, H. D., Misic, B., & Baillet, S. (2021). Brief segments of neurophysiological activity enable individual differentiation. *Nat. Commun.*, *12*(1), 5713. <https://doi.org/10.1038/s41467-021-25895-8>
- Tadel, F., Baillet, S., Mosher, J. C., Pantazis, D., & Leahy, R. M. (2011). Brainstorm: A user-friendly application for MEG/EEG analysis. *Comput. Intell. Neurosci.*, *2011*, 879716. <https://doi.org/10.1155/2011/879716>
- Tadel, F., Bock, E., Niso, G., Mosher, J. C., Cousineau, M., Pantazis, D., Leahy, R. M., & Baillet, S. (2019). MEG/EEG group analysis with brainstorm. *Front. Neurosci.*, *13*, 76. <https://doi.org/10.3389/fnins.2019.00076>
- Taylor, K. N., Joshi, A. A., Hirfanoglu, T., Grinenko, O., Liu, P., Wang, X., Gonzalez-Martinez, J. A., Leahy, R. M., Mosher, J. C., & Nair, D. R. (2021). Validation of semi-automated anatomically labeled SEEG contacts in a brain atlas for mapping connectivity in focal epilepsy. *Epilepsia Open*, *6*(3), 493–503. <https://doi.org/10.1002/epi4.12499>
- Vakilna, Y. S., Atilgan, D., Hampson, J., Chinara, C., Medani, T., Leahy, R. M., Lacuey, N., Lhatoo, S. D., Pati, S., Mosher, J. C., & Gavvala, J. R. (2025). Time-frequency fingerprint analysis in SEEG source-space to identify the epileptogenic zone. *Ann. Clin. Transl. Neurol.*, *12*(9), 1932–1936. <https://doi.org/10.1002/acn3.70115>
- Wong, S. M., Arski, O. N., & Ibrahim, G. M. (2024). An automated algorithm for stereoelectroencephalography electrode localization and labelling. *Seizure*, *117*, 293–297. <https://doi.org/10.1016/j.seizure.2024.04.002>