Python

A challenge for data sharing in systems neuroscience is the multitude of different data formats used. Neurodata Without Borders: Neurophysiology 2.0 (NWB:N) has emerged as a standardized data format for the storage of cellular-level data together with meta-data, stimulus information, and behavior. A key next step to facilitate NWB:N adoption is to provide easy to use processing pipelines to import/export data from/to NWB:N. Here, we present a NWB-formatted dataset of 1863 single neurons recorded from the medial temporal lobes of 59 human subjects undergoing intracranial monitoring while they performed a recognition memory task. We provide code to analyze and export/import stimuli, behavior, and electrophysiological recordings to/from NWB in both MATLAB and Python. The data files are NWB:N compliant, which affords interoperability between programming languages and operating systems. This combined data and code release is a case study for how to utilize NWB:N for human single-neuron recordings and enables easy re-use of this hard-to-obtain data for both teaching and research on the mechanisms of human memory [1)].

In April 2019, Feng et al. downloaded glioma-related publications indexed in PubMed between 1994 and 2018. They used Python to extract the title, publication date, MeSH terms, and abstract from the metadata of each publication for bibliometric assessment. Latent Dirichlet allocation (LDA) was applied to the abstracts to identify publications' research topics with greater specificity.

They identified and analyzed a total of 52,625 publications. They found that research on prognosis and the treatment of glioblastoma increased the most in terms of volume and rate of publications over the past 25 years. However, publications regarding clinical trials accounted for <5% of all publications considered in this study. The current research landscape covers clinical, pre-clinical, biological, and technical aspects of glioblastoma; at present, researchers appear to be less concerned with glioblastoma's psychological effects or patients' end-of-life care.

Publication of glioma-related research has expanded rapidly over the past 25 years. Common topics include the disease's molecular background, patients' survival, and treatment outcomes; more research needs to be done on the psychological aspects of glioblastoma and end-of-life care [2)].

Using Python language, a new software was designed to modify the identified tags and allow the automatic conversion of images to meet LGP requirements. Results By modifying the tags of DICOM images, we could use spectroscopic cartography images in radiosurgical planning using LGP. We created a software to reproduce these modifications using a simple and rapid interface. This software executes all the protocols established in the methodology. Conclusion The new software, “GP Adapting Solution”, can convert any DICOM image and make it compatible with LGP. The integration of multivoxel spectroscopic images was feasible and could be used for radiosurgical planning. This work is the first step in allowing the potential use of new MRI modalities in radiosurgical planning using LGP. The next steps are to evaluate the impact of these modalities in radiosurgical treatments and to develop methods for integrating other imaging modalities [3)].

The article of Kubben PL. Programming for physicians: A free online course. Surg Neurol Int. 2016 Mar

29;7:29. doi: 10.4103/2152-7806.179382. eCollection 2016. PubMed PMID: 27127694; PubMed Central PMCID: PMC4828953, is an introduction for clinical readers into programming and computational thinking using the programming language Python. Exercises can be done completely online without any need for installation of software. Participants will be taught the fundamentals of programming, which are necessarily independent of the sort of application (stand-alone, web, mobile, engineering, and statistical/machine learning) that is to be developed afterward [4].

1)
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