School of Engineering & Computing Sciences

NYIT Undergraduate Research and Entrepreneurs Program Mini Grant Proposal

Students:

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Faculty Advisor: Dr. Nabi Sertac Artan, Department of Electrical and Computer Engineering, SoECS, NYIT

Project period: July 20, 2017 - May 20, 2018

Objective:

We intend to create a multi channel band classification algorithm for classifying sleep stages. The team will get the datasets needed, perform data mining techniques to filter, normalize and organize the data in the needed format. Team will aslo come up with a machine learning algorithm in order to classify the data. The Algorithnm will be based off the state of the art work in Sleep Stage Classification using Single Channel Band EEG Raw Data for creation of the algorithm and work in Classification with Mutiple inputs of EEG and EMG Data for combining the channel bands together.

Already Completed Timeline and Deliverables:

July - Auguest Literature review

- One 40 minutes weekly meeting to present project progress.
- Presented to the faculty advisor selected research papers.
- Wrote summary of each research paper found.

August - October: Acquiring the data and running the older implementations

- Found the best suitable data to work with.
- Downloaded the dataset.
- Ran the previously created implementations.

- Solved issues with Tensorflow and CUDA versions.

October - December: Our implementation

- Changed the single chanel band to mutiple channel bands.
- Ran the model with the new dataset in Google Cloud.
- Researched on a better way of organizing and preprocessing data due to low accuracy score.

Proposed Timeline and Deliverables:

Weeks 1-4: Literature review on Multi Channel input networks.

- One 40 minutes weekly meeting to present project progress.
- One deck of 4-8 slides, which the Advisor can use as status report.
- Short summary of the week's activity to be submitted with the report.

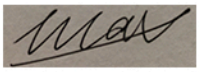
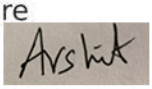
Weeks 5-9: Data preproccessing

- Preprocessing the data using a newly selected method.
- Applying normalization techniques.
- Midterm report and presentation.

Weeks 9-14: Creating the algorithm

- Testing the implementation.
- Finding the best parameters through fine tuning.
- Final oral presentation to report the progress.
- Poster with the final report of the progress.

Budget: We request the mini-grant to fund the cloud computation on Google Cloud Services, due to not having a machine on campus that is capable of computation required by the research. A machine needs to have a GPU Tesla p100 or an equivalent Graphical Processing Unit.

	3/15/2018
Team member 1, Signature	Date
	3/15/2018
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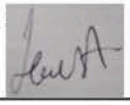	3/15/2018
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