SIGHT Reporting Template

Second Bi-Annual, 2013

IEEE
Advancing Technology for Humanity

1. Basic Information

- Name of SIGHT

BIOTECH

- Name of Sponsoring OU

CIIS LAB

- Country

Argentina

- Region

R 9 - Sección Argentina - Buenos Aires

- Name and Email of Contact Person

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IEEE Advancing Technology for Humanity

2. Objectives

- What are the current objectives of your SIGHT?

To organize an interdisciplinary team with health and engineering professionals and scientist focused on Autism.

Design electronic devices/software systems to create a meta-language and model linguistic reasoning for autisms. To do so, the team will use modern Morphosyntactic linguistic wavelets.

Design advanced treatments/diagnosis of autism, based on software and hardware devices.

3. Fit into SIGHT mission

- How do your objectives Inspire, Enable, and/or Connect or Incubate, Demonstrate and/or Educate?

Autism (ASD) is increasing every year in all the world, specially in regions with critical pollution:

http://edition.cnn.com/2013/06/19/health/prenatal-pollution-autism/index.html

http://www.environmentalhealthnews.org/ehs/news/2013/pollution-and-autism

- ***In USA, 1 out of 54 boys and 1 in 252 girls are diagnosed with autism in the United States. ASD is estimated to affect more than 2 million individuals.***
- ***In Argentina. 100.456 kids between 0 and 14 years old have ASD .***

3. Fit into SIGHT mission

- How do your objectives Inspire, Enable, and/or Connect or Incubate, Demonstrate and/or Educate?

The team BIOTECH, is currently leaded by PhD. Daniela López De Luise, a specialist in Computational Linguistics, and director of CIIS Lab, that is working with linguistic reasoning since 8 years ago.

The goal is to apply all this knowledge to help persons with autism and to help professionals in the field to recover them to a normal life.

The team has: engineers, bioengineers, mathematician, psychologists, speech therapist, linguist, coaches working with affected people, etc.

3. Fit into SIGHT mission

a) From the administrative perspective:

Sign-up collaboration agreements with any laboratory and university in order to:

- ***allow entities to cover expenses, publications and congresses.***
- ***start a networking that become leader and a reference in the field of linguistic reasoning for autism.***
- ***start a solid background to apply to international awards such as NSF, UE, NICHD, etc.***
- ***position the topic as a source of new researching reusable for other similar diseases***
- ***Start a library of approaches and solutions with open access for patients.***
- ***Cover the lack of evaluation approaches of the results, based on statistics and solid validation procedures.***

3. Fit into SIGHT mission

b) From the scientific/technical perspective:

- ***Define a set of devices, software modules, procedures and recommendations on treatment and recovering of ASD patients.***
- ***Define a set of metrics and indicators to compare and evaluate results properly.***
- ***Define and develop a linguistic reasoning model in order to understand better the inner mental process and help patients to share feelings and communicate.***
- ***Participate in technical, scientific and promotion publications.***
- ***Perform events to share advances and direct contact between colleagues.***

3. Activities

What activities have you implemented in the last 6 months? (Please provide as much detail as possible.)

The activities started in August 2013. 9 persons are currently collaborating and 2 more will start working in a couple of months.

The team is organized in 4 subgroups:

- ***MLW (morphosyntactic wavelets). Goal: apply linguistic reassoning model with and iterfaces.***
- ***Audio devices (GDA). Goal: design and develop prototypes do hardware and software devices (stand alone/WEB) to enhance patient communication.***

3. Activities

- ***Visual devices (GDV). Goal: define and develop prototypes for software/hardware devices to enhance visual interaction with the patient.***

- ***Metrics/Indicators (GMI). Goal: define a set of metrics and indicators to evaluate properly data from technologies.***

- ***Mela-language inferences (GIM). Goal: design and test a new meta-language from indicators and metrics collected from devices. This meta-language is evaluated by a morphosyntactic wavelets model to reproduce linguistic reasoning and detect anomalies.***

3. Activities

The groups are following this plan:

Task	Duration (months)	Team	Deliberable
Background	***1***	***All***	***Summary report.***
Test plan	***1***	***MLW/BC/GCD***	***Preliminar plan first communication.***
Audio	***3***	***GDA/GIM***	***Data/software interfaces design.***
Preliminar Design testing plan	***2***	***GDA***	***Design, resources list, preliminar quotation, funding plan.***
Paper 1	***1***	***GDA/MLW/GIM/ GC***	***Position paper.***

3. Activities

Task	Duration (months)	Team	Deliberable
Prototype 1	*4*	*GDA*	*Sound beta prototype.*
Test–1	*2*	*GIM/GMI*	*Data statistics. Inference algorithm.*
Refinement	*2*	*GDA/GC*	*Sound alpha prototype.*
Test–2	*2*	*GDA/GC/GMI*	*Design, resources list, preliminar quotation, funding plan, testing plan.*
Paper 2	*1*	*GDA/MLW/GIM/ GC*	*Test report-2, dataset 2 for GIM, paper 2.*

3. Activities

Task	Duration (months)	Team	Deliberable
Test-2 Evaluation.	*2*	*GIM/GMI*	*Data analysis, inference refinement.*
Refinement.	*2*	*GDA/GC*	*Sound, prototype, paper 3.*
Metalenguage integration.	*3*	*GDA/GC/MLW*	*Integrated subsystem, paper 4.*
Visual design.	*3*	*GDA*	*Initial report GDA.*
GIM interfaces.	*3*	*GDV/GIM*	*Interface report.*

3. Activities

Task	Duration (months)	Team	Deliberable
Preliminar design.	*2*	*GDV*	*Design document, resources list, preliminat quotation, funding plan, testing plan.*
Paper-1.	*1*	*GDV/MLW/GIM/ GC*	*Position paper.*
Prototype beta.	*4*	*GDV*	*First visual prototype.*
Testing-1 design.	*1*	*GDV/GMI/GC*	*Report testing 1, dataset for GIM/GMI.*
Test-1 evaluation.	*2*	*GIM/GMI*	*Data analysis, inference algorithm.*

3. Activities

Task	Duration (months)	Team	Deliberable
Prototype refinement.	*2*	*GDV/GC*	*Alpha visual prototype.*
Test-2 beta.	*1*	*GDV/GMI/GC*	*First visual prototype.*
Testing-2 design.	*1*	*GDV/GMI*	*Report testing 2, dataset form GIM/GMI, paper 2.*
Test-2 analysis.	*2*	*GIM/GMI*	*Data analysis, inference refinement.*
Prototype refinement.	*2*	*GDA/GC*	*Sound prototype, paper 3.*

3. Activities

Task	Duration (months)	Team	Deliberable
Sound, metalanguage, integration.	***3***	***GDA/MLW/GC***	***Integrated sound, metalanguage.***

Currently the team is performing the first month of this preliminar plan.

4. Learning

- What, if anything, have you learned through these activities? (Unexpected challenges, different results than planned, surprising successes, etc.)

According to specialists in the field, this work has never been performed previously, so we are pretty sure results will be valuable for the communities.

We expect to promote and develop the idea:

- ***Congresses.***
- ***papers/articles.***
- ***events.***
- ***prototype leasing/selling.***
- ***provide open tools to schools and health care centers treating autistics.***

5. SIGHT Metrics

- Number of IEEE members enabled through the activities of the last six months:

5 (five).

- Number of people benefited by activities of the last six months:

1 (one) professionals working in the field.

4 (four)young engineers making specialization on this topic to reapply it to other deseases.

3 (three) senior scientists acquiring further knowledge for new technologies.

Pending: thousand of patients that will try this new technology for free.

6. Future plans

- What activities are you planning for the next six months?

Those indicated in slides 10-15 as a preliminar plan. This will be tuned as the team collects more formal information.

7. Support Expected from IEEE

- Do you plan to seek support from IEEE in the next six months? If so, what?

- ***Funds to acquire resources/publish. The funding plan is intended to define which other sources.***
- ***Volunteers from other sections to collaborate.***
- ***Promotion and formal sponsoring.***

8. Photos

- Please insert photos to document your work, group, etc.

The team has members from many provinces:

- ***Student branch Universidad de Mendoza.***
- ***Student branch San Rafael - Mendoza.***
- ***CIIS Labs in Buenos Aires.***
- ***QUANTUM PI research lab in San Rafael - Mendoza.***
- ***IEEE Argentina.***
- ***Mendoza University in Mendoza .***
- ***Foundation TIPNEA (Tratamiento Integral para Niños con Espectro Autista y TGD) San Rafael – Mendoza.***

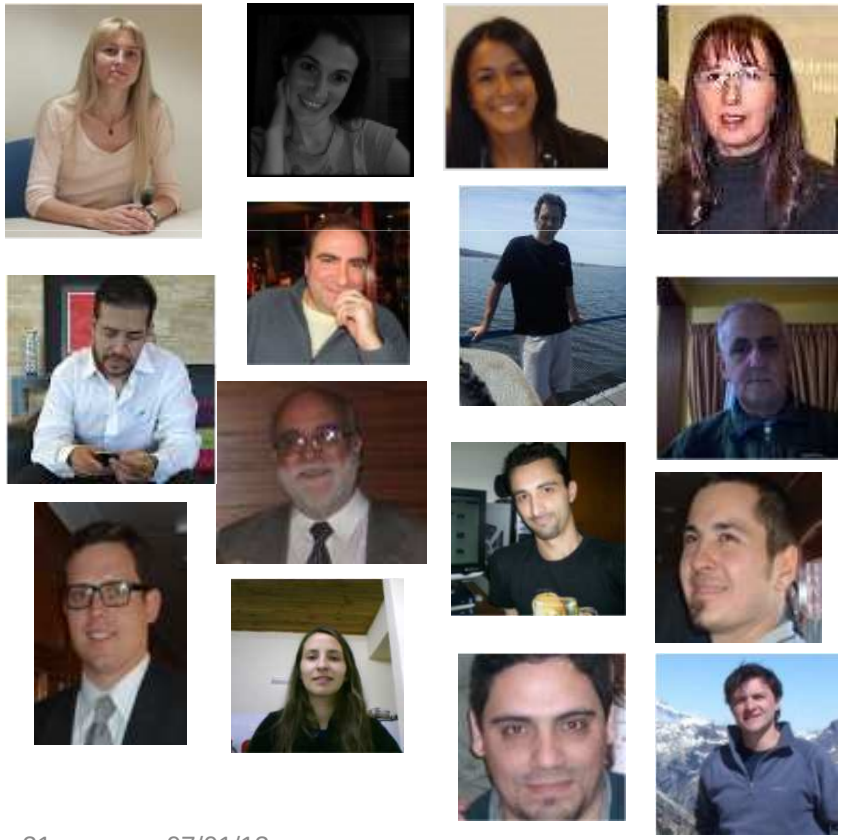
8. Photos

CI²S Labs

IEEE Argentina
Evolucionando la Tecnología para la Humanidad

UM UNIVERSIDAD DE MENDOZA

LABORATORIO



Fundación T.I.P.N.E.A.

Tratamiento Integral Para Niños con Espectro Autista y TGD

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Thank You!

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