DMP title

Project Name SyncSense DMP - DMP title

Project Identifier 12ZE222N - SyncSense

Grant Title 12ZE222N

Principal Investigator / Researcher Hazem Sallouha

Description SyncSense's final objective is to realize a synchronized CWN by employing refined dynamic stochastic models and exploiting the advances in machine learning. I will design synchronization algorithms for CWNs, achieving a significant breakthrough in CWNs' supported range of wireless applications. The performance of the proposed synchronization algorithms will be examined on real-world CWNs by collecting IQ samples, enabling accurate analysis of the framework's design parameters for optimal performance. In particular, SyncSense's synchronization framework will be evaluated in the context of three signal processing applications: cooperative decoding, target tracking, and cooperative beamforming.

Institution KU Leuven

1. General Information

Name applicant

Hazem Sallouha

FWO Project Number & Title

Project number: 12ZE222N

Title: SyncSense: Towards Cooperative Processing Using Noncoherent Crowdsourced Wireless Networks

Affiliation

- KU Leuven

2. Data description

Will you generate/collect new data and/or make use of existing data?

- Reuse existing data

Describe in detail the origin, type and format of the data (per dataset) and its (estimated) volume. This may be easiest in a table (see example) or as a data flow and per WP or objective of the project. If you reuse existing data, specify the source of these data. Distinguish data types (the kind of content) from data formats (the technical format).

The data types are observational of real-time broadcast signals (IQ samples of the wireless signals), which are periodically collected by crowdsourced networks managed by Elecrosense and Open-sky initiatives.

Type of data	Format	Volume	How created
IQ samples	.MAT, .CSV	100 - 500 GB	Scan the wireless spectrum

3. Legal and ethical issues

Will you use personal data? If so, shortly describe the kind of personal data you will use. Add the reference to your file in KU Leuven's Register of Data Processing for Research and Public Service Purposes (PRET application). Be aware that registering the fact that you process personal data is a legal obligation.

- No

Are there any ethical issues concerning the creation and/or use of the data (e.g. experiments on humans or animals, dual use)? If so, add the reference to the formal approval by the relevant ethical review committee(s)

- Yes

The dual-use risk of the proposal has been assessed by the EC DMM at KU Leuven and has been approved with Ref. no: D-211005.b

Does your work possibly result in research data with potential for tech transfer and valorisation? Will IP restrictions be claimed for the data you created? If so, for what data and which restrictions will be asserted?

- No

Do existing 3rd party agreements restrict dissemination or exploitation of the data you (re)use? If so, to what data do they relate and what restrictions are in place?

- No

4. Documentation and metadata

What documentation will be provided to enable reuse of the data collected/generated in this project?

I will be a secondary user of the datasets as they are collected by initiatives such as Electrosense and OpenSky networks. The datasets of certain receivers can be requested via their websites. Since KU Leuven is a partner in these initiatives, we always have access to all datasets collected.

Will a metadata standard be used? If so, describe in detail which standard will be used. If no, state in detail which metadata will be created to make the data easy/easier to find and reuse.

- No

5. Data storage and backup during the FWO project

Where will the data be stored?

During the research, the data will be stored in the KU Leuven's OneDrive storage, which is automatically backed-up. I have 2 TB of storage, which is more than enough for SyncSense's (only 100s of GB). For data protection and security I will rely on the experienced IT team of KU Leuven.

How is backup of the data provided?

KU Leuven's OneDrive storage is automatically and periodically backed-up.

Is there currently sufficient storage & backup capacity during the project? If yes, specify concisely. If no or insufficient storage or backup capacities are available then explain how this will be taken care of.

- Yes

I have 2 TB of storage on OneDrive, which is more than enough for SyncSense's datasets (only 100s of GB).

What are the expected costs for data storage and back up during the project? How will these costs be covered?

The use of OneDrive is free of charge for KU Leuven associates.

Data security: how will you ensure that the data are securely stored and not accessed or modified by unauthorized persons?

For data protection and security I will rely on the experienced IT team of KU Leuven. The data will be stored in the university's secure environment for private data.

6. Data preservation after the FWO project

Which data will be retained for the expected 5 year period after the end of the project? In case only a selection of the data can/will be preserved, clearly state the reasons for this (legal or contractual restrictions, physical preservation issues, ...).

After the research, all datasets used in SyncSense will be stored on ESAT central network drives. Following KU Leuven's RDM policy research datasets will be kept for 10 years. Limited data of high value (e.g., validation datasets) will be made public on a more permanent basis.

Where will the data be archived (= stored for the longer term)?

The data will be stored on ESAT central network drives (with automatic backup procedures) for at least 10 years, conform the KU Leuven RDM policy.

What are the expected costs for data preservation during the retention period of 5 years? How will the costs be covered?

The IQ samples to be used in SyncSense will be stored on ESAT central network drives. In view of the size of the expected dataset (<500 GB), the estimated cost for the storage drive expansion is 100 EUR.

7. Data sharing and reuse

Are there any factors restricting or preventing the sharing of (some of) the data (e.g. as defined in an agreement with a 3rd party, legal restrictions)?

- No

Which data will be made available after the end of the project?

Limited data of high value (e.g., validation datasets) will be made public on a more permanent basis on IEEE data port.

Where/how will the data be made available for reuse?

- In an Open Access repository

When will the data be made available?

- Upon publication of the research results

Who will be able to access the data and under what conditions?

The full dataset will be uploaded in a MAT format in IEEE data port as an open access dataset under a CC-BY license. Therefore, it will be available to anyone for any purpose, provided that they give appropriate credit to the creators.

What are the expected costs for data sharing? How will the costs be covered?

It is expected that the data publication is free of costs.

8. Responsibilities

Who will be responsible for data documentation & metadata?

The PI, Hazem Sallouha, bears the responsibility for the data documentation & metadata.

Who will be responsible for data storage & back up during the project?

The PI, Hazem Sallouha, bears the responsibility for data storage & back up during the project.

Who will be responsible for ensuring data preservation and reuse ?

The PI, Hazem Sallouha, and his advisor, Prof. Sofie Pollin, share the responsibility for ensuring data preservation and sharing.

Who bears the end responsibility for updating & implementing this DMP?

The PI, Hazem Sallouha, bears the end responsibility of updating & implementing this DMP.