

# The DREAM Dataset: Behavioural data from robot enhanced therapies for children with autism spectrum disorder

**SND-ID:** snd1156-1. **Version:** 1. **DOI:** <https://doi.org/10.5878/17p8-6k13>

## Download data

DREAM2020\_SND1156-001-V1.0.zip (3.04 GB)

## Citation

Billing, E. (2020) The DREAM Dataset: Behavioural data from robot enhanced therapies for children with autism spectrum disorder (Version 1) [Data set]. University of Skövde. Available at: <https://doi.org/10.5878/17p8-6k13>

## Creator/Principal investigator(s)

Erik Billing - University of Skövde, School of Informatics

## Research principal

[University of Skövde](#) - The School of Informatics

## Description

This dataset comprise behavioural data recorded from 61 children diagnosed with Autism Spectrum Disorders (ASD). The data was collected during a large-scale evaluation of Robot Enhanced Therapy (RET). The dataset covers over 3000 therapy sessions and more than 300 hours of therapy. Half of the children interacted with the social robot NAO supervised by a therapist. The other half, constituting a control group, interacted directly with a therapist. Both groups followed the Applied Behavior Analysis (ABA) protocol. Each session was recorded with three RGB cameras and two RGBD (Kinect) cameras, providing detailed information of children's behaviour during therapy. This public release of the dataset does not include video recordings or other personal information. Instead, it comprises body motion, head position and orientation, and eye gaze variables, all specified as 3D data in a joint frame of reference. In addition, metadata including participant age, gender, and autism diagnosis (ADOS) variables are included.

All data in this dataset is stored in JavaScript Object Notation (JSON) and can be downloaded here as DREAMdataset.zip. A much smaller archive comprising example data recorded from a single session is provided in DREAMdata-example.zip. The JSON format is specified in detail by the JSON Schema (dream.1.1.json) provided with this dataset.

JSON data can be read using standard libraries in most programming languages. Basic instructions on how to load and plot the data using Python and Jupyter are available in DREAMdata-documentation.zip attached with this dataset. Please refer to <https://github.com/dream2020/data> for more details.

The DREAM Dataset can be visualized using the DREAM Data Visualizer, an open source software available at <https://github.com/dream2020/DREAM-data-visualizer>. The DREAM RET System that was used for collecting this dataset is available at <https://github.com/dream2020/DREAM>.

**Data contains personal data**

No

**Language**

[English](#)

**Unit of analysis**

[Individual](#)

**Population**

61 Romanian children, age 3 to 6 years, diagnosed with autism spectrum disorder (ADOS-G)

**Study design**

Experimental study

Randomised controlled trial (RCT)

**Sampling procedure**

[Non-probability: Availability](#)

**Time period(s) investigated**

2017-03-01 – 2018-08-31

**Variables**

12

**Response rate/participation rate**

61%

**Data format / data structure**

[Numeric](#)

[Text](#)

[3D](#)

**Responsible department/unit**

The School of Informatics

**Contributor(s)**

University of Plymouth, School of Engineering, Computing and Mathematics

Universitatea Babes-Bolyai, Department of Clinical Psychology and Psychotherapy

University of Portsmouth, School of Computing

Vrije Universiteit Brussel, Department of Mechanical Engineering

SoftBank Robotics

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- Funding agency's reference number: 611391

## Ethics Review

Other - Ref. 30664/February 10th, 2017: Scientific Council of Babes-Bolyai University in Cluj-Napoca, Romania

## Research area

[Computer vision and robotics \(autonomous systems\)](#) (Standard för svensk indelning av forskningsämnen 2011)

[Applied psychology](#) (Standard för svensk indelning av forskningsämnen 2011)

## Keywords

[Autistic disorder](#), [Behavior therapy](#), [Robotics](#)

## Publications

Cao, H. L., Esteban, P., Bartlett, M., Baxter, P. E., Belpaeme, T., Billing, E., ... Ziemke, T. (2019). Robot-Enhanced Therapy: Development and Validation of a Supervised Autonomous Robotic System for Autism Spectrum Disorders Therapy. IEEE Robotics and Automation Magazine.

**DOI:** <https://doi.org/10.1109/MRA.2019.2904121>

Cai, H., Fang, Y., Ju, Z., Costescu, C., David, D., Billing, E. A., ... Liu, H. (2019). Sensing-enhanced Therapy System for Assessing Children with Autism Spectrum Disorders: A Feasibility Study. IEEE Sensors Journal, 9(4), 1508–1518.

**DOI:** <https://doi.org/10.1109/JSEN.2018.2877662>

Esteban, P. G., Baxter, P., Belpaeme, T., Billing, E. A., Cai, H., Cao, H., ... Ziemke, T. (2017). How to Build a Supervised Autonomous System for Robot-Enhanced Therapy for Children with Autism Spectrum Disorder. Paladyn, Journal of Behavioral Robotics, 8(1), 18–38.

**DOI:** <https://doi.org/10.1515/pjbr-2017-0002>

If you have published anything based on these data, [please notify us](#) with a reference to your publication(s). If you are responsible for the catalogue entry, you can update the metadata/data description in DORIS.

## Accessibility level

Access to data through SND

Data are freely accessible

## Use of data

[Things to consider when using data shared through SND](#)

## License

[CC BY-NC-SA 4.0](#)

## Versions

Version 1. 2020-07-23

## Homepage

<https://github.com/dream2020/data>

<https://www.dream2020.eu/>

### **Contact for questions about the data**

Erik Billing

[erik.billing@his.se](mailto:erik.billing@his.se)

### **Download metadata**

[DataCite](#)

[DDI 2.5](#)

[DDI 3.3](#)

[DCAT-AP-SE 2.0](#)

[JSON-LD](#)

[PDF](#)

[Citation \(CSL\)](#)

[File overview \(CSV\)](#)

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