

# Gerard Sanroma-Guell, PhD

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*objective: to use my analytic skills to advance image and data analyses*

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## experience

- 2017–present **research staff associate**, *German Center for Neurodegenerative Diseases*, Bonn.
- organization and management skills by managing the MRI data flow of the Rhineland Study from acquisition to feature extraction making available quality-assured measures of brain structure and function to the scientists of the study
  - design, develop and deploy deep-learning-based tools for automatic quantification of cerebral anatomy and lesions, thus contributing to the pool of structural brain measures of the study
  - day-to-day inter-disciplinary collaboration with imaging physicists, epidemiologists, IT-experts and image analysis experts to maintain the core infrastructure of the study as well as to contribute with the scientific output
- 2014–2017 **research staff associate**, *Univ. Pompeu Fabra*, Barcelona (Spain).
- used deep learning and ensemble learning techniques to segment anatomical structures in the infant and fetal brains [1] being ranked among the top-8 methods (out of 21) in an international infant brain segmentation challenge [2, 3]
  - led a collaboration with the [fetal medicine research center](#) that resulted in the discovery of markers of abnormal brain development (using the above-mentioned tool) in fetuses with isolated mild ventriculomegaly, a condition with difficult prognosis [4]
  - organization and supervision skills by mentoring 2 PhD students
- 2012–2014 **research staff associate**, *Univ. of North Carolina*, Chapel Hill (USA).
- used machine learning and matrix completion techniques to segment anatomical brain MRI leading to the best results to date in an international segmentation challenge [5]

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## skills and tools

- data analysis 5+ years experience in supervised / unsupervised machine learning, deep learning, boosting, ensemble methods, kernel methods, manifold learning, bayesian statistics
- data formats 10+ experience in multiple data formats including images (natural images and neuroimaging), video and biomedical
- programming 10+ years experience in python, c++, matlab, linux bash, git
- tools 3+ years experience in jupyter-notebooks, scikit-learn, theano, pandas, numpy, nipy, matplotlib, seaborn,  $\text{\LaTeX}$ , [github](#)
- geometry 6+ years experience in shape analysis, point pattern matching, graph matching
- communication delivered many presentations to technical audiences in international conferences ([see list](#)) as well as to layman audiences ([see example](#))

leadership coordinate the MRI data flow in the Rhineland Study, from acquisition to feature extraction and quality control. Supervise 2 PhD students

writing published >30 peer-reviewed papers ([see list](#)) and maintain a [personal blog](#)

customer accustomed to multi-disciplinary environments and to engage in clinical collaborations

organization organized international workshops on medical image processing years [2017](#) and [2018](#)

learning great flexibility to step-out of my comfort zone and learn new things

## education

2008–2012 **PhD computer science (cum laude)**, *Univ. Rovira i Virgili*, Tarragona (Spain).  
[Graph matching using position coordinates and local features for image analysis](#)

2006–2008 **MSc computer science**, *Univ. Rovira i Virgili*, Tarragona (Spain).

## selected publications

- [1] **G Sanroma**, *et al.*: [Learning to combine complementary segmentation methods for fetal and 6-month infant brain MRI segmentation](#) Computerized Medical Imaging and Graphics (2018)
- [2] L Wang, **G Sanroma**, *et al.*: [Benchmark on Automatic 6-month-old Infant Brain Segmentation Algorithms: The iSeg-2017 Challenge](#). IEEE Transactions on Medical Imaging (2019)
- [3] **G Sanroma**, *et al.*: [Learning Non-Linear Patch Embeddings with Neural Networks for Label Fusion](#). Medical Image Analysis (2017) ([code](#))
- [4] OM Benkarim, **G Sanroma**, *et al.*: [Cortical folding alterations in fetuses with isolated non-severe ventriculomegaly](#). Neurolmage Clinical (2018)
- [5] **G Sanroma**, *et al.*: [A Transversal approach for patch-based label fusion via matrix completion](#). Medical Image Analysis (2015)

(see [complete list](#))

## languages

native **catalan, spanish**

proficient **english**

intermediate **german**

basic **french**

## hobbies

o learn german, social media ([twitter](#), [linkedin](#)), fly drones, read (news, novels), sports (swim, hike, bike)