

The 2011 Data Mining and Astrostatistics Workshop & Summer School
WGA7: New Statistical Techniques

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“Working with Gaia data will often require use of **novel statistical techniques**. These may need to be supported by the underlying database system containing the catalogue. In any case it would be very interesting to organise statistical workshops in Europe to learn about techniques relevant to exploration of Gaia-like datasets.”

Archivo Editar Ver Historial Marcadores Herramientas Ayuda

http://camd08.ast.cam.ac.uk/Greatwiki/WGA7NewStats

ASTROFÍSICA INFORMÁTICA UNED UTILIDADES RAE Gaia - Home Gaia Wiki Gaia SVN GREAT Weka experiment-design... Radio Nacional de E...

Posgrado Oficial "Inteligenci... ProGrama < RecGaia < TWiki WGA7NewStats - Great Wiki Japón - Camerún : Fase de ...

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Participants

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Activities with in the ITN

Workshop on (Advanced) Statistics

Terminado

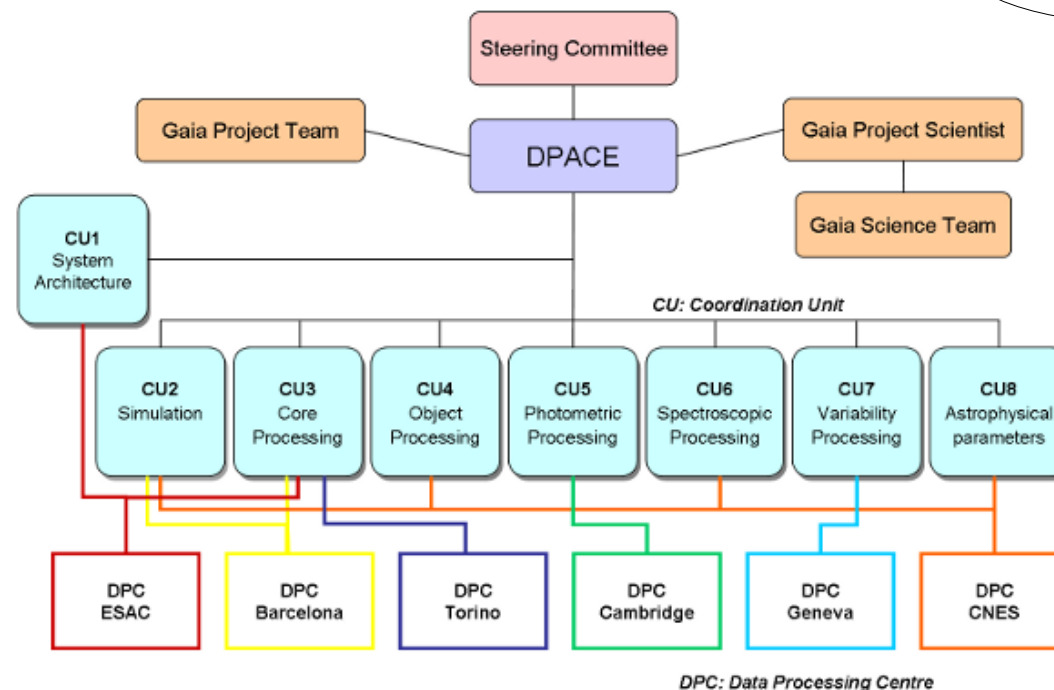
We encounter a necessity to

- 1) define the needs posed by GAIA in the framework of statistical techniques
- 2) identify which of these require new developments
- 3) train PhD students and postdocs in the statistical techniques needed

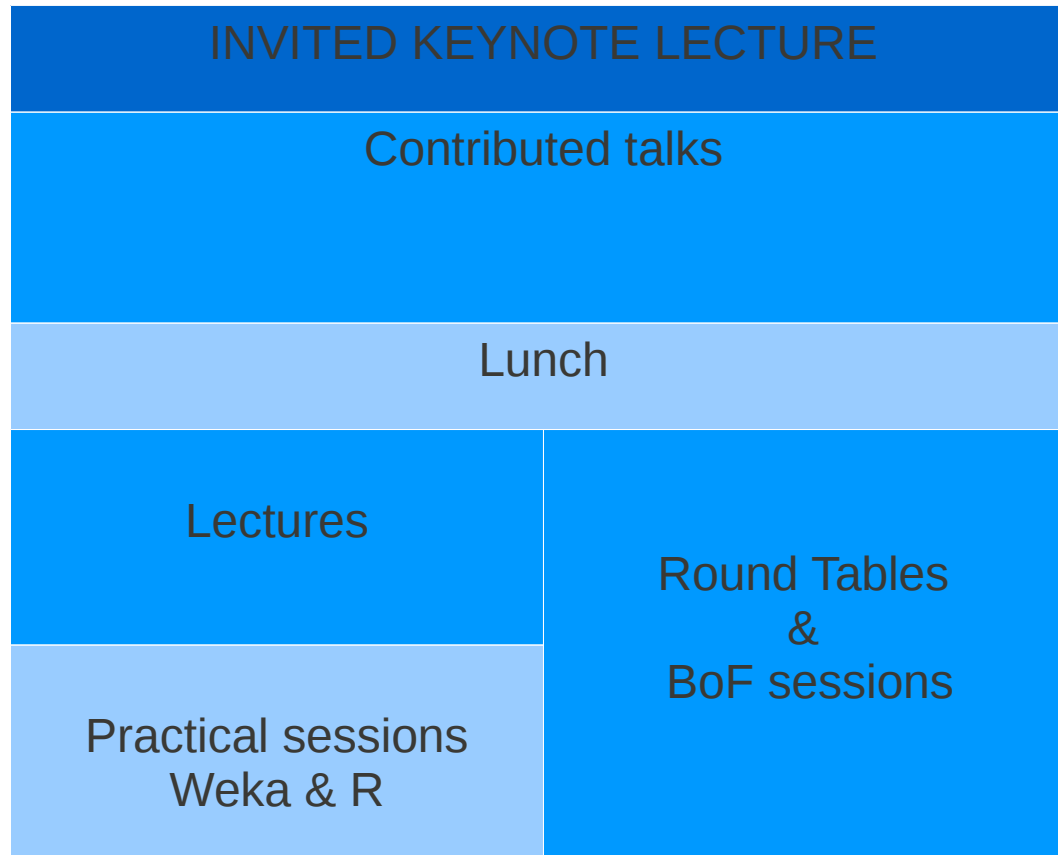
in the scientific exploitation stage

- 4) train PhD students and postdocs in the statistical techniques

used by DPAC



Proposal: A joint workshop and Summer School



It is aimed at addressing the necessities highlighted before, but it has to be sufficiently broad and general as to attract experts practising statistics in all areas of astrostatistics.

IWINAC
International Work-conference on the Interplay between Natural and Artificial Computation

Bio-Sciences
Interplay
Computation

IWINAC 2009 has concluded now. The proceedings with *all refereed accepted* papers (oral and poster) were published in the Springer Lecture Notes on Computer Science Series, volumes [LNCS-5601](#), and [5602](#)

The next IWINAC event will take place in [La Palma](#) island (Canary Islands, Spain) in 2011.

Previous Events	Location	Dates	Proceedings (Springer)	DOIs (Digital Object Identifiers)	DBLP pages	Journals special issues
IWINAC2009	Santiago de Compostela, Galicia, Spain	June 22-26, 2009	LNCS-5601 , and 5602	doi:10.1007/978-3-642-02264-7 , doi:10.1007/978-3-642-02267-8	IWINAC2009-1 , IWINAC2009-2	(in edition)
IWINAC2007	La Manga del Mar Menor, Murcia, Spain	June 18-21, 2007	LNCS-4527 and 4528	doi:10.1007/978-3-540-73053-8 , doi:10.1007/978-3-540-73055-2	IWINAC2007-1 , IWINAC2007-2	NaCo , Neurocomp .
IWINAC2005	Las Palmas de Gran Canaria, Canary Islands, Spain	June 15-18, 2005	LNCS-3561 and 3562	doi:10.1007/b137289 , doi:10.1007/b137296	IWINAC2005-1 , IWINAC2005-2	-

This server also already contains some information about [IWANN events before 2004](#).

Please, send any questions, comments or suggestions about IWINAC to the organization staff: info@iwinac.org

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Last update: October 2008 webmaster@iwinac.org

Lecture Notes in Computer Science
LNCS LNAI LNBI

Terminado

Keynote Lecture I:

Data Mining and Statistics in the era of the petabyte databases. Technical aspects, database architecture, intelligent access, distributed computing, efficient software...

Keynote Lecture II:

Hot topics in astrostatistics (recent developments in statistics brought about by astronomical problems)

Keynote Lecture III:

Latest developments in Bayesian inference for Astronomy

Keynote Lecture IV:

Time series analysis in astronomy

Keynote Lecture V:

Applications of wavelet analysis in astronomy

Current status II : Classical Lectures

Course I:

Classical statistics: basic concepts, inference, error analysis, hypothesis testing, confidence intervals. The frequentist approach versus Bayesian statistics. Priors. The problem of model selection. Sampling techniques (MCMC, nested sampling...)

Course II:

Advanced statistical techniques: Time series analysis. Wavelet analysis. Techniques for astronomical image processing. Spherical statistics.

Course III:

Supervised Classification and Regression I : the problem of feature selection, curse of dimensionality, regression (mono and multivariate, linear and non linear). Assessment of regression models.

Course IV:

Supervised Classification and Regression II: Continuous and categorical variables. Classification models (artificial neural networks, support vector machines, bayesian networks...). Model evaluation (n-fold cross validation and variants; statistical tests). Feature selection revisited.

Course V:

Unsupervised classification: alternative methodologies, the problem of feature selection for clustering, evaluation.

Discussion forum I:

Virtual Observatories, Data Mining and Astrostatistics.

Discussion forum II:

Statistical developments needed for the scientific exploitation of GAIA I: time series analysis

Discussion forum III:

Statistical developments needed for the scientific exploitation of GAIA II: Galactic structure.

Discussion forum IV:

The construction of training and test sets in astronomical applications of Data Mining.

Discussion forum V:

Pan-european initiatives in Data Mining and Astrostatistics.

- Bias estimation analysis: virtually all areas
- Galactic dynamics: model fitting, hypothesis testing, structure detection (wavelets?),...
- Chemical tagging: model fitting, regression (supervised classification), clustering
- Outlier analysis, new object types, exotic systems, fast stages of stellar evolution...
- And so much more...

THE END

