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SINCE 2009 (CONCLUDING REMARKS)

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RESUMEN

En este artículo, doy un resumen de vuelo de pájaro del Third Astrorob Workshop

ABSTRACT

In this article, I give a bird's eye view summary of the Third AstroRob Workshop.

Key Words: telescopes

III Workshop on Robotic Autonomous Observatories (Torremolinos, Malaga, Spain, 7-11 October 2013)
Editors: J. C. Tello, A. Riva, D. Hiriart & A. J. Castro-Tirado

1. GENERAL

Since the beginning of human being, we started using many tools and naturally the needs as workmanship and work have grown up dramatically by time. We have eye witnessed many achievements before and after the telescopes came into our life. And human being have been always keen on doing things in automatically for better productivity. To be honest, this point could always be discussed because sometimes all this achievements can be used to be a lazy as well.

If one would like to wonder why we need Robotic Autonomous Observatories, one should read the review article by Castro-Tirado (2010). In that article you will find "the history of Robotic Autonomous Observatories" and "Science and Technology with Robotic Autonomous Observatories" and "Massive Data Production" and "Data Analysis and Education" and "Public Outreach" and "the Future Beyond 2010".

And if one would like to wonder how much we can benefit the Robotic Autonomous and for what we can use, one should read the summary of the second Workshop on Robotic Autonomous Observatories by Zarnecki (2012).

2. 3^{RD} WORKSHOP

We had 42 exciting oral presentation and 26 posters at the third workshop.

On the first day, we listened talks on hardware and software development and, real-time and off-line analysis pipelines.

On the second day, we listened talks on scientific results obtained at Robotic observatories and Telescope Control Systems, and Archiving the data and quality control.

On the third day, we listened talks on Global Networks and Protocols and wide field imaging efforts and importance for follow-ups.

On the fourth day, the last day, we listened Public Outreach and Citizen Science: Educational Applications and Future Strategies.

2.1. *A Little Bit Detail to Get the Lovely Scent of the Workshop*

We know adaptive optic technology for a long time but first time we heard of "The First Autonomous Laser Guide Star Adaptive Optics Instrument", a great system to achieve a great efficiency for 1-3m class telescopes (Riddle 2014). This will be a very personal opinion of mine but, this achievement showed me that there is no limit for autonomous systems and it also will bring lots of quality into observational data if one can get it.

In this workshop we had something slightly different than previous ones. This time we had status reports from long term projects. Especially, I was amazed by BOOTES because this project has been extended from China to Mexico since I heard it first time in 2009 (Jelinek et al. 2010), (Jelinek 2014), (Fan 2014), (Tello 2014), (Hiriart 2014). And GLORIA Project is spreaded over the world for the benefit of public education and science (Sanchez-Moreno 2014). In the coming years we are going to eyewitness of SONG (Stellar Observation Network Group) which is a network of 1m telescopes placed around the globe (Andersen 2014).

When we were listening "BAM: A metrology device for a high precision astrometric mission" (Riva 2014) and "Astrometric Instrument Model software tool for Gaia real-time instrument health monitoring and diagnostic" (Busonero 2014) at the workshop, all over the world astronomers were waiting for the launch of the Gaia project. When you are reading

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this lines, it was already launched on the 19th of December 2013, these projects are already started paying off all efforts which scientists put in.

We also have been reminded the importance of small telescopes by Giovannelli and Sabau-Graziati (2014) that is one of my favorites. And one of my dreams became possible using different telescopes by running the same program, ACS (Alma Common Software) (Westhues et al. 2014). The Global MASTER is an ongoing project since 2002 and had many successful observations and results on GRBs and optical transients (Lipunov et al. 2010), (Lipunov et al. 2012), (Lipunov et al. 2014).

We also had the pleasure of listening long term educational experience of "The PIRATE Facilicity" (Kolb 2014) and "Bradford Robotic Telescope" (Baruch 2014) and saw their impact on education. Of course we should mention about the CESAR Telescope network that consists of not only optical domain but also radio domain (Vaquerizo 2014).

3. CONCLUSION

We did again have a great workshop. In one of the joint discussion sessions, a few important details have been mentioned by Alberto J. Castro Tirado that I would like to put down here;

1. Whatever Robotic Telescope System you choose, DO NOT DUPLICATE EFFORTS!

2. Data analysis in real time is a must. The huge amount of data being gathered implies this.

3. Most robotic telescopes devoted to imaging (photometry), and are able to continue monitoring of any kind of astrophysical sources. Some of them are even able to discover transients. Useless if they are reported with months delay!

4. To properly gain insight into the physical nature of transient sources we need to classify them! This means either to have specific spectroscopic programs at larger diameter telescopes

5. ...or to own a middle size (10 x diameter!) robotic telescopes devoted to spectroscopy. But a large (at least 2.5m diameter telescope) is beyond the reach of all individual teams. Should we put a common proposal for two such systems? (1 north and 1 in the south).

So far, we mostly deal with the technology and it looks getting a standard by time because of availability of technology all around the world.

If we consider the above points and we once stepped into data produced by RTs, we all are embedded into a huge amount of data and we should figure it out how to digest them in proper way. Personally, I have thrown a few graduate students of mine into thousands of light curves produced by ASAS Project (Pojmanski 1997) and they are trying to get the data from the archive and put them in proper format to put into light curve solution programs and solve them. If you dare to torture yourself teaching any people on any data taken from any archive by any RT, you will certainly understand me what I mean.

I know I could not mention all presentations, but the conference book will be very explanatory for itself. Till we meet in the next workshop, I wish you a great time reading this 3^{rd} Workshop Proceeding Book, because you are going to find lots of new achieved details for yourself.

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