Towards Integrated Safety for Powered Two – wheelers

Issue 3 – October 2009

Editorial

by Ugo Galvanetto

Dear Partners of the MYMOSA network and other interested readers, we are entering the final period of our project. MYMOSA was born on the 1st of October 2006 and its final date will be the 30th of September 2010, therefore we have clearly passed the 'mezzo del cammin di nostra vita'. The present issue of our newsletter contains the farewell words of two of our Experienced Researchers: Kimmo at page 2 and Milan, at page 3. We wish them all the best in their lives and professional careers. At page 3 Güven, one of our Early Stage Researchers, is describing his activities at LMU in Munich. However it is not time to draw any conclusions yet: several people have just joined our network Leonard Ciubotaru, Michal Manka, Nicola Cofelice and Alessandro Toso have recently joined our lucky member LMS while Luis Filipe Matos, Bernhard Fiedler and Nicolas Nemirovsky started their work at TNO. We can read about LMS' activities in the first article of the newsletter written by Jian Kang. Finally on page 4 there is the last few vacancies which have not been filled yet. We are looking for young people interested in motorbike safety with a degree in engineering related subjects.

The general objective of the MYMOSA project is to improve Power Two Wheelers (PTW) safety and riders' safety leading to a significant reduction of injuries and fatalities of motorcyclists. This objective will be reached by co-operation of researchers from universities, research institutes and companies. Generation of multi-disciplinary know-how (accidentology, accident dynamics, biomechanics), development of simulation tools, predictive models and new protective equipment concepts and a new safety vision through the implementation of integrated safety (new devices, sensors, control systems) are all outcomes expected from the MYMOSA activities. The research project itself trains Early Stage Researchers (ESR's) and is used as a tool for transfer of knowledge. More information on the project can be found at: www.mymosa.eu/

Workpackage 1: PTW Accident Dynamics

by Jian Kang

Workpackage 1 focuses on motorcycle accident dynamics which involves 5 Early-Stage Researchers (ESR) and 3 Experienced Researchers (ER) from 2 Universities and 3 high-tech companies / organizations.

The scientific and technological (S&T) objective of the workpackage is to realize a well-validated computer aided engineering (CAE) methodology, and corresponding toolset to describe the interaction between vehicle-rider-environment during PTW driving in the pre-accident and accident phases. The methodology will be used for the analysis of dangerous driving situations, including a number of selected accident scenarios.

The multidisciplinary nature of the motorcycle–rider-environment system calls strongly for an integrated modeling and simulation process. The process involves different modelling approaches such as multibody simulation, finite elements, control theory, experimental data from real scenarios, etc. As such, a rigorous and well defined methodology is necessary to link all these approaches in an efficient way.

The team started with three ESRs from the University of Florence, LMS International and the University of West Bohemia who collaborated in investigating and developing the methodology to establish such fully integrated approach, involving PTW dynamics, rider and control characteristics, and structural compliance on contact.

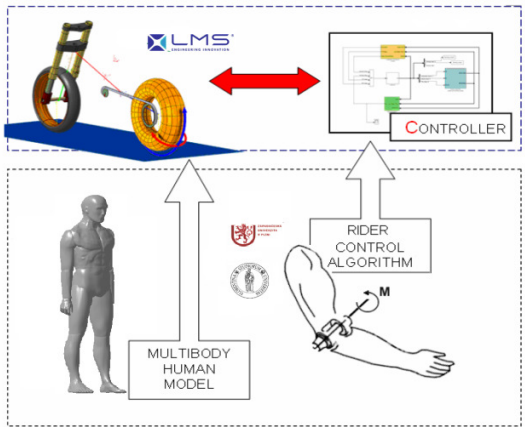

Figure 1 First Stage Working Domain

Through valuable cooperation among partners in WP1 and at Consortium level including secondments, short visits, workshops, web-meetings, the research is executed by using state-of-the-art commercial software packages such as LMS Virtual.Lab Motion, RADIOSS, MADYMO, open codes such as MATLAB and Maple to develop the missing elements and features.

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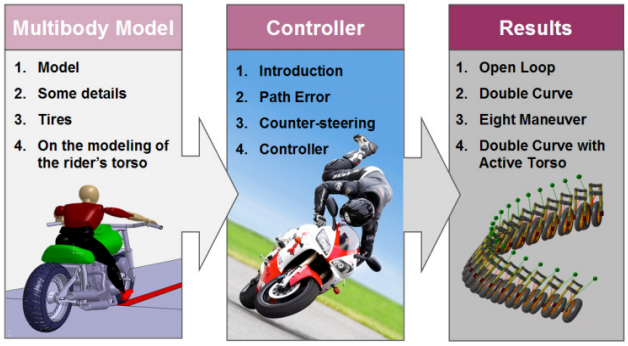

Figure 2 Motorcycle Normal Ride Simulation Process in LMS Virtual.Lab Motion

While detailing the key aspects of the investigated methodology, the team is working on completing the analysis loop of accident dynamics by studying and integrating those aspects such as enhanced motorcycle models, pre-crash scenario definitions, virtual rider / controller and different levels of human body dynamical analysis models.

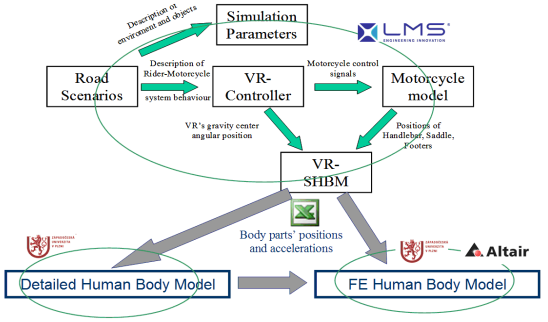

Figure 3 Rider-Motorcycle-Environment System Level Analysis

Jian Kang
RTD Project Leader
Product Manager
LMS International

Via Hamburg to Tuscany

By Kimmo Kauvo

Before the MYMOSA-project I was working as a research scientist at VTT, Technical Research Centre of Finland. At VTT I gained experience of positioning, route guidance and route planning as well as short range wireless and client/server technologies in various research projects.

My educational background is in telecommunication and software systems. During the period at VTT I was involved also with international projects and therefore I became interested in doing research abroad. One day I heard about the MYMOSA-project. A chance and a challenge were presented to me. A possible position at Ibeo-AS, Hamburg, Germany, doing research with laserscanners. After that things started to roll.

Due to my little experience of working abroad, a leap from a big independent research institute to a foreign SME company was little bit exciting. At the beginning of June 2008 I started at Ibeo-AS as a software developer at the research team headed by Kay Fürstenberg. My responsibility is to implement the LUX-laserscanner technology for motorcycles. I have been doing sensor programming and data management. I have adapted and extended the current ground detection so that it can be used in motorcycles, where the situation is more challenging (due to rolling) compared to passenger vehicles. According to first tests the new algorithms are faster and work well in motorcycles. At the inspiring atmosphere at Ibeo-AS, I have learnt about the latest lasescanner technology and a lot about the software teamwork. Also the cooperation with Avinash Penumaka from UNIFI who was doing his four month secondment at Ibeo-AS was successful. I learnt the basics on motorcycle accidentology and typical accident scenarios of motorcycles. Industry-academia knowledge transfer is ongoing and became deeper when I started the two month networking activity period at UNIFI (Florenze, Italy) in April. The knowledge acquired at Ibeo-AS was exploited during that period with Professor Marco Pierini and his research group.

This short and fascinating year with many contacts, many friends and experiencing German and Italian cultures has now come into an end. I'd like to thank everyone, especially those who made all this happen. Ciao!

Figure 4 Ibeo LUX Laserscanner on the demonstrator

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Servus

by Güven Kavadarlı

After spending nearly 2 years in the MYMOSA Project, I feel like a very lucky person. I got my BSc degree in mechanical engineering and my MSc degree in forensic science. I worked for a short period in the production field, in which I was only using my engineering skills. When I had the opportunity to take part in the MYMOSA Project, I felt very excited. Working in an international academic project, which aim is to provide safety for motorcyclists, is golden. No amount of any kind of product can be equal to one human life. I am also proud of having a PhD position in Ludwig Maximilian University, which has won 13 Nobel Prizes until now. I was sure that I would find the opportunities to make scientific experiments and to share valuable knowledge with qualified researchers. There was also another surprise last year. Lovely Munich was celebrating its 850th age. I was witnessing history.

At the beginning of the project my research subject was in-depth study of rider behaviour and definition of an HMI for PTW applications. But by time it changed a little and now I concentrate more on the motorcyclist behaviour during urgent braking. My main purpose is to find the proper warning stimulus to get the fastest reaction time of the rider.

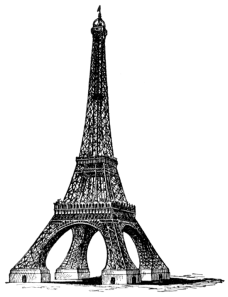
In the laboratory of the Bundeswehr University in Munich, we completed with Ioannis Symeonidis, who is another ESR, the motorcycle deceleration experiments. We used a big mechanical sled to simulate the braking process of a motorcycle. We had to load it before every experiment with our hands by turning a winch. Lifting 300 kg is something which needs effort! So doing scientific research not only with our minds but also with our muscles was a great experience for both of us. The picture on the bottom left belongs to the sled we used by our experiments.

One of my expectations for the future is that my previous institute in my home country Turkey will also take part in European projects like MYMOSA.

At last I want to thank every single person who created the MYMOSA Project and who gave me the opportunity being a part of it. Until now I made scientific experiments, I saw new places, I found a great Greek friend and I met Işılay, the love of my life.

Portuguese in Paris

by Milan Toma



For the first time in my life, I visited Paris twelve years ago. It was an organized trip from high school. At the time I only visited the second floor of the Eiffel Tower and when leaving I said to myself that one day I return and go to the top. When I applied for the position at Altair I knew I would get it, because all my dreams always come true. Actually, it was a conjunction of two dreams, I also wanted to try and experience how it was to work at a private company. I always wondered if I was losing something by dedicating my life only to research in the academic world.

So I found myself in Paris fulfilling my dreams. I came to France from Portugal where I have got my PhD degree in engineering science. It was my second country abroad. I was born and have completed my Master's degree in Slovakia. I was quite excited about my involvement in the project, because it was something new, something different from the way I used to work before. The five years in Lisbon I was closed in my office in front of a monitor programming. In MYMOSA I got to travel and visit other universities, companies and institutions trying to figure out how to cooperate in order to contribute to the success of the project together.

I got to learn about exciting finite element tools and models developed at Altair and to use them together with a visiting ESR for the purpose of assessing the injuries of a motorcyclist involved in an accident. We had a nice time working and exploring France together. MYMOSA has also given me the opportunities to develop several nice friendships I now value highly.

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Also, I believe the fact of being awarded the Marie Curie fellowship with the position has helped me to get the next position at the University of Tokyo where I am located now. Although, working on a project more related to my work in Portugal. I did return to the academia after all. However, the gained experience was ever so useful.

During my last week in Paris I tried to visit the top of the Tour Eiffel several times, but, as I got used to it by then, they were on strike and so one day I have to return to Paris again. But I would return anyway.

Recruitment – Employment status

At the moment 11 Early Stage Researchers (ESR's) are employed in the network. Two new Early stage researchers started their research; Nicola Cofelice started his ESR position at LMS the 16th of March and his colleague ESR at LMS, Leonard Ciubotaru started the first of April 2009. We wish them a fruitful and interesting time within the MYMOSA project. At the Experienced researchers side, two research fellows finished their employment; Milan Toma finished his position the 5th of May at ALTAIR and Kimmo Kauvo finished his work at IBEO the first of June. We wish both researchers a successful career and hopefully we will met them in one of another occasion. Furthermore, Alessandro Toso started at LMS on 1 June as ER (1 year) who will work on sensor simulation/implementation in MBS environment. His contact will be: alessandro.toso@lmsintl.com

Vacancies

1. UNIFI, Italy: New ER position position on the development of innovative PTW integrated safety system. For more information contact prof. M. Pierini. marco.pierini@unifi.it

Upcoming events

Open workshop – all interested people

Date 4 and 5 February 2010
Location: TNO, Helmond, The Netherlands
The organisation of this workshop is in conjunction with the PISA project and in the hands of Prof. Marco Pierini and Giordana Marcon giordana.marcon@unifi.it. The workshop is open to all interested people, also outside the MYMOSA and PISA project.

Past events

Project management meeting – *Mymosa members only*

Date: 29 and 30 September 2009
Location: LMS, Leuven Belgium. For more information please contact: Dr Ugo Galvanetto at : u.galvanetto@imperial.ac.uk.

Midterm workshop – *Mymosa members only*

Date: 30 September 2009
Location: LMS, Leuven, Belgium
The organisation of the mid term workshop is done by: Lex van Rooij, please contact him for more information: lex.vanrooij@tno.nl

The dynamics of motorcycle driving (hands on event)

Date: 28 July 2009
Location: Helmond (the Netherlands)
For more information please contact: Mr Filipe Fraga at filipe.fraga@gmail.com

Colophon

This newsletter is published at least twice a year. It supports the members of the MYMOSA research training network and other interested parties in the motorcycle safety community by informing them about the work progress and related activities.

Questions or suggestions? Please contact us!

Cor van der Zweep
Uniresearch B.V.
c.vanderzweep@uniresearch.nl

or

Ugo Galvanetto
Imperial College London
u.galvanetto@imperial.ac.uk