

Optimization and Operation Research methods for Real Life Industrial Problems

Tibor Csendes and Balázs Bánhelyi

University of Szeged



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Basic and Applied Research Grants in Hungary

The basic research support from Hungarian sources remained nominal in the same level since 2006. Ca. 20% of the applications are successful. The typical amount is about 4 000 Euros per full time researcher year.

European Union fund based Hungarian grants support mostly basic research, more on the salary and income side, and less in purchasing equipment. Our university has a success rate over 60%, the typical amount is 15 000 Euros per full time researcher year.

The Hungarian research support scheme has several other smaller programs (post doc, travel, bilateral etc.)

The Rumanian government established a new direct measure: without preliminary application, each researcher obtains a fix sum (1 000 Euros) to be divided by Rumanian coauthors of papers accepted in impact factor journals.

Innovation and applied research support in Hungary

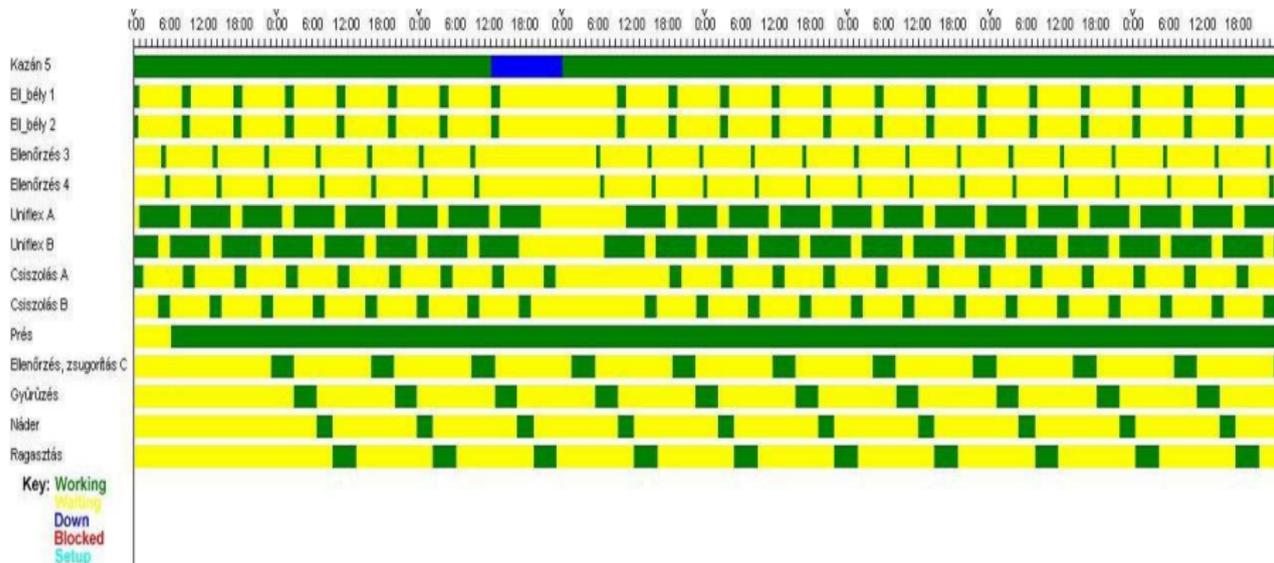
The government support for innovation and research is around 0.8% of the GDP. It is a fair figure, close to those of developed countries. What is missing to reach the European Union suggestion of 3% is the innovation of firms.

The Hungarian tax regulations allow industrial firms to spend 1% of their cash flow on innovation, development and applied research purposes. This sum can be subtracted from their tax. The total amount is around 0.1% of the Hungarian GDP.

A typical rubber part of a car produced in the factory to be improved



Machine scheduling in the production of rubber parts of automobiles



Advantages of scheduling algorithm

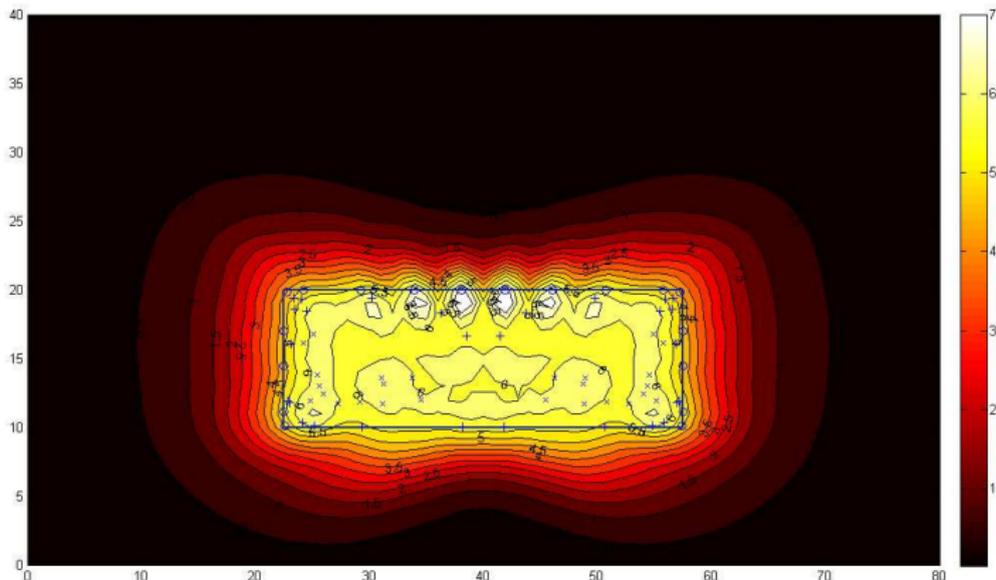
Provides closely optimal solution within half an hour on usual computers.

It allows to redesign the daily schedule quickly in case of emergency, or accidents.

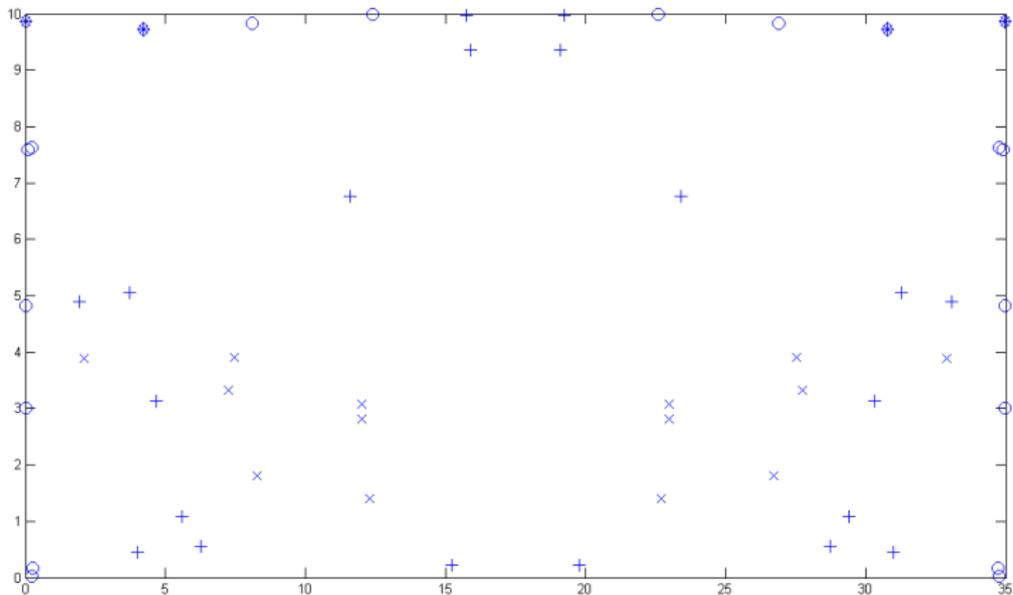
It does not depend on the presence of certain persons.

Extreme situations can be simulated in advance.

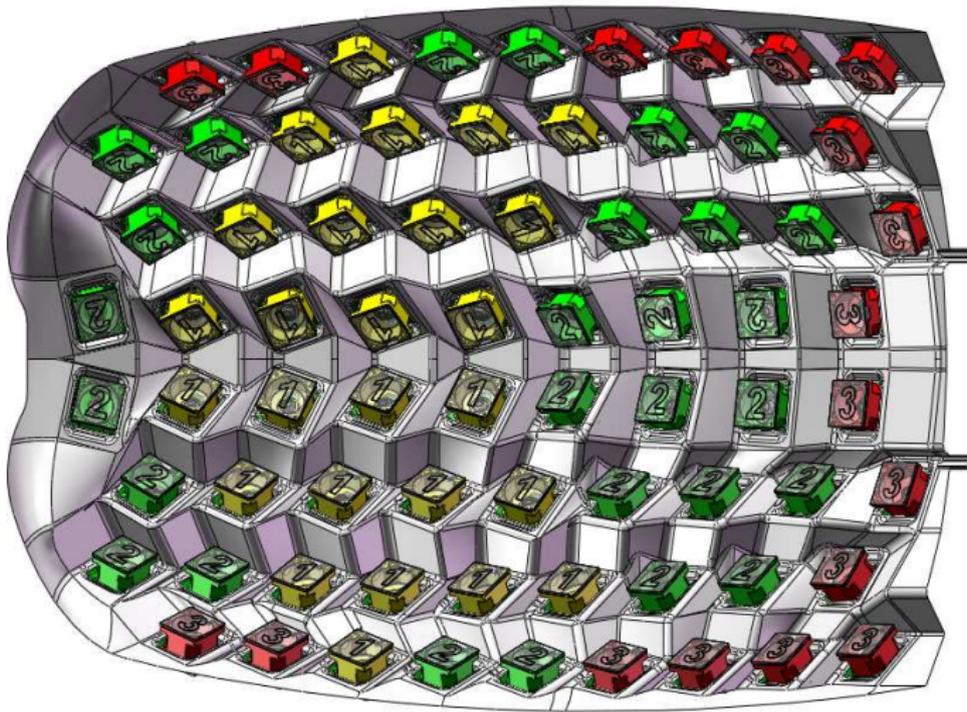
How to design LED based lighting units that meet regulations?



Centers of individual LEDs



A picture of the designed lighting unit



The final product



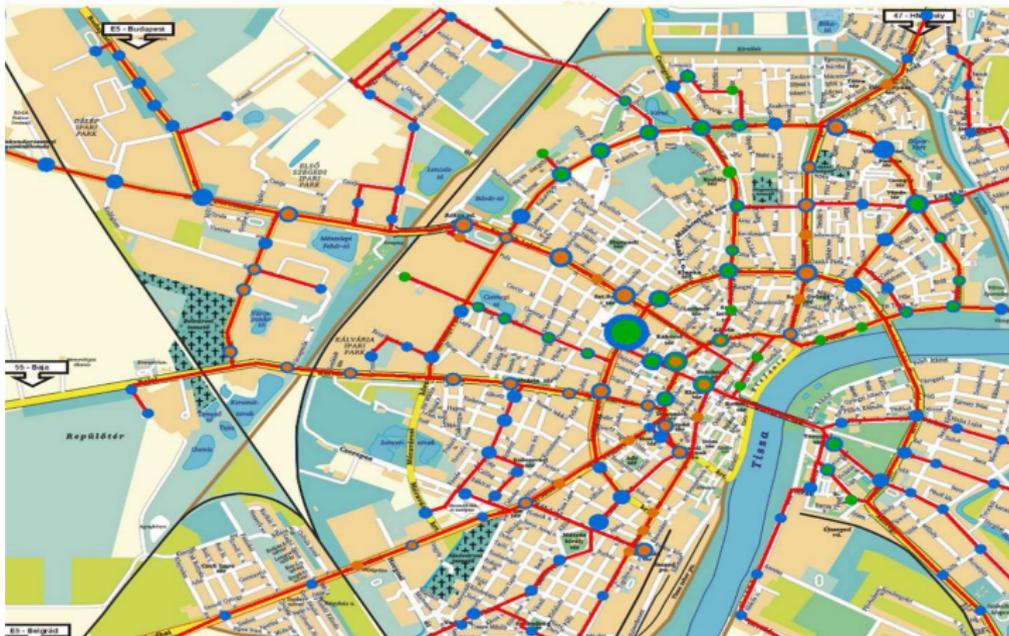
Advantages of LED design system

Provides closely optimal solution within hours on usual laptops.

It produces automatically good solutions fitting to divers local regulations.

The quality of the designs is much better than that of hand-set approximations in terms of total cost.

The public transportation model of Szeged



The sociology model regions of Szeged



Which ticket system is optimal?

The present system requires one ticket per travel for 270 HUF, independently of the travel time.

If we set 3 types of time based tickets as 20 minutes for 250 HUF, 40 minutes for 400 HUF, and 70 minutes for 550 HUF, then we can achieve 4.5% more tickets sold, and 16% more income.

Acknowledgement

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More industrial projects are shortly described on the page

`http://www.inf.u-szeged.hu/tanszekek/
alkalmazottinformatika/inf_ipari_proj_en.xml`

Some videos on our innovation projects are available at

`http://www.u-szeged.hu/innovizio/`



Szeged Dom
Jan. 14, 2006, G. Corliss