



# Optil.io Platform: Evaluation as a Service for Metaheuristics

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# 18<sup>th</sup> Century: Origins of Crowdsourcing

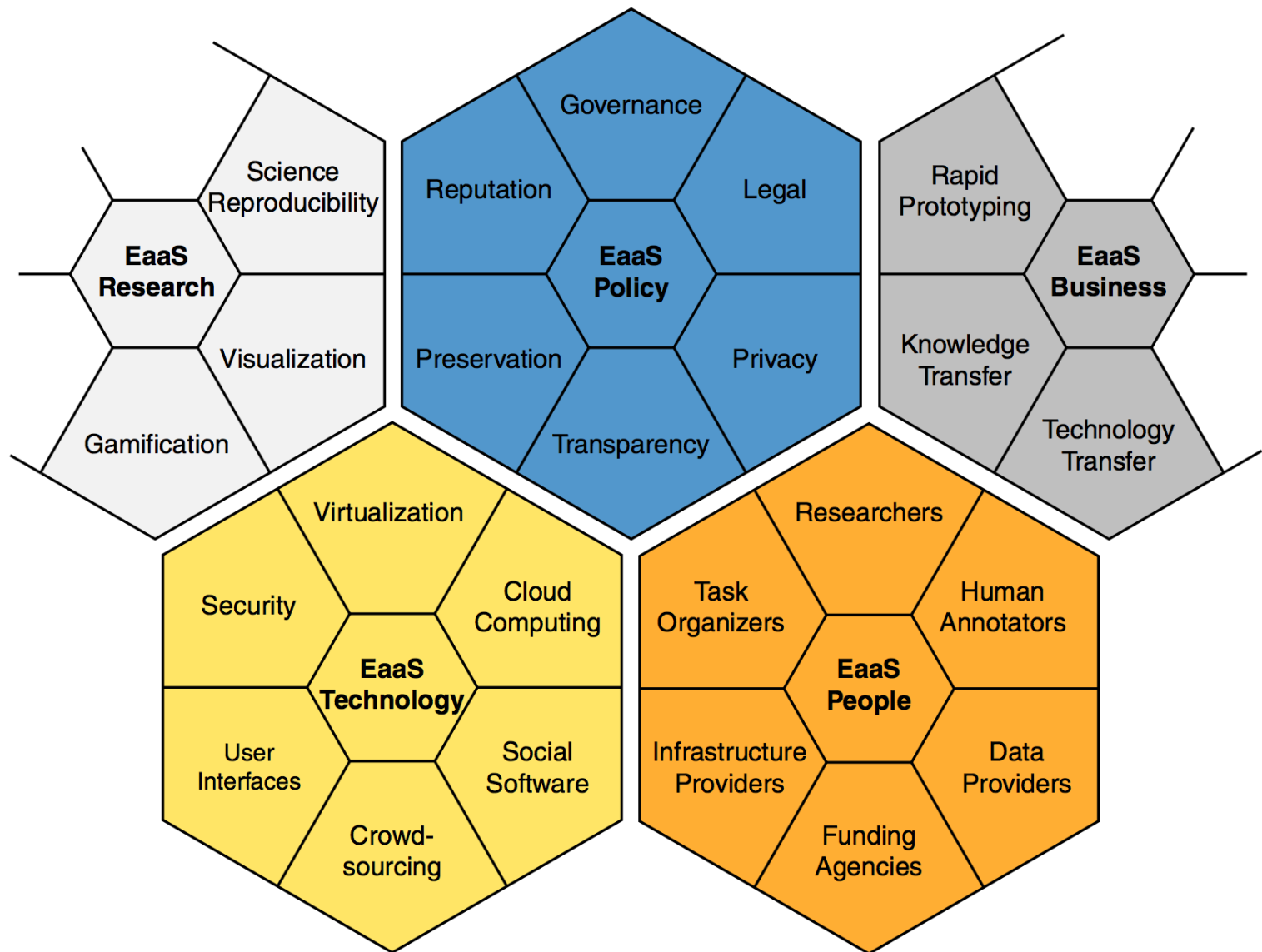


A large crowd of people is gathered at night, likely at a festival or competition. In the background, there are bright, glowing fires or light displays. The people are dressed in casual summer attire, and the atmosphere appears lively and crowded.

Over 100 000 people participate in  
crowdsourced competitions each year

In 2016 Kaggle spent \$1.2M on prizes

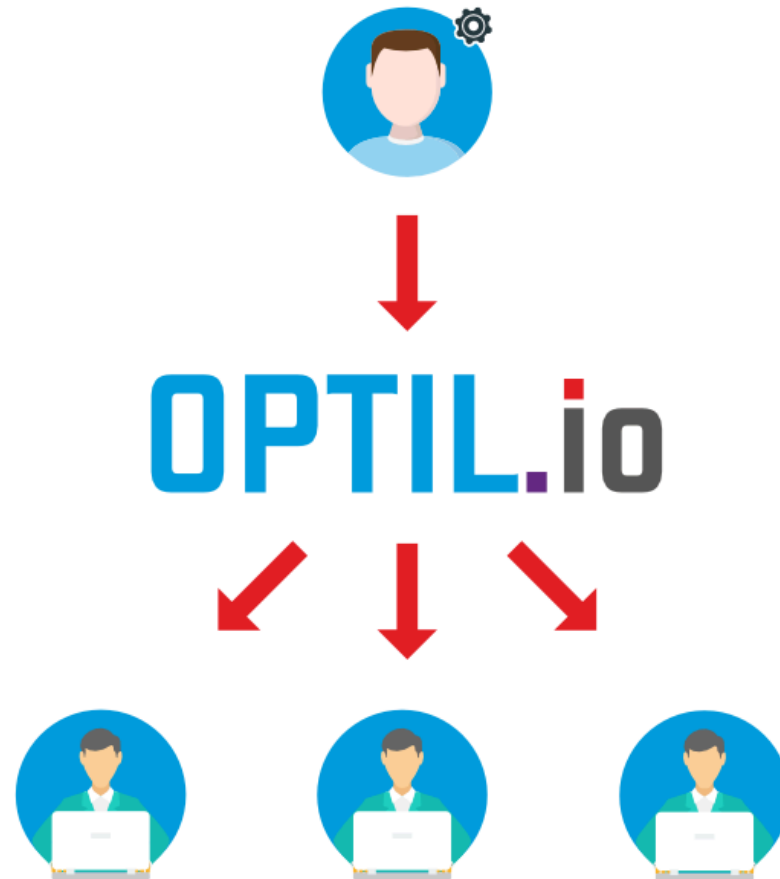
SPOJ on-line judge evaluated over 19M  
submissions



Hanbury, Allan, et al. "Evaluation-as-a-Service: Overview and outlook." *arXiv preprint arXiv:1512.07454* (2015).



# Optimization problems shared in a cloud...



...for coders and scientists.

Industry

Science

Education



**OPTIL.io**

Off-line problems

On-line problems

Tournaments



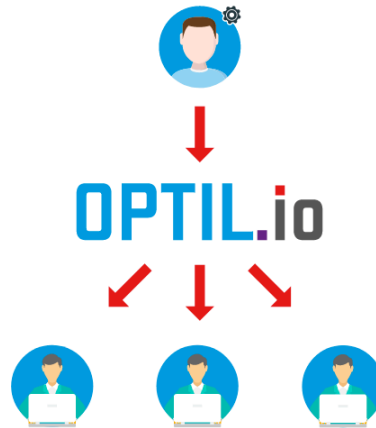
# OPTIL.IO - DESIGN ALGORITHMS THAT CAN REACH THE VERY TOP!



## WELCOME TO OPTIL.IO

**OPTIL.io** is a website where you can test your skills and compete with other brilliant programmers and scientists in solving optimization problems. Do not wait and [see how it works](#) or [start solving problems](#). Join **298** users who have already submitted **7848** solutions.

[READ MORE...](#)



Do you have an industrial or scientific optimization problem?

Contact us, so that we can publish it.

Then it can be solved by the most brilliant scientists and coders!

## @FACEBOOK

[You can now submit TGZ packages if your solution consists...](#)

Thu Mar 16 10:50:13 CET 2017

[Optil.io is providing an evaluation environment for...](#)

Wed Mar 15 20:19:21 CET 2017

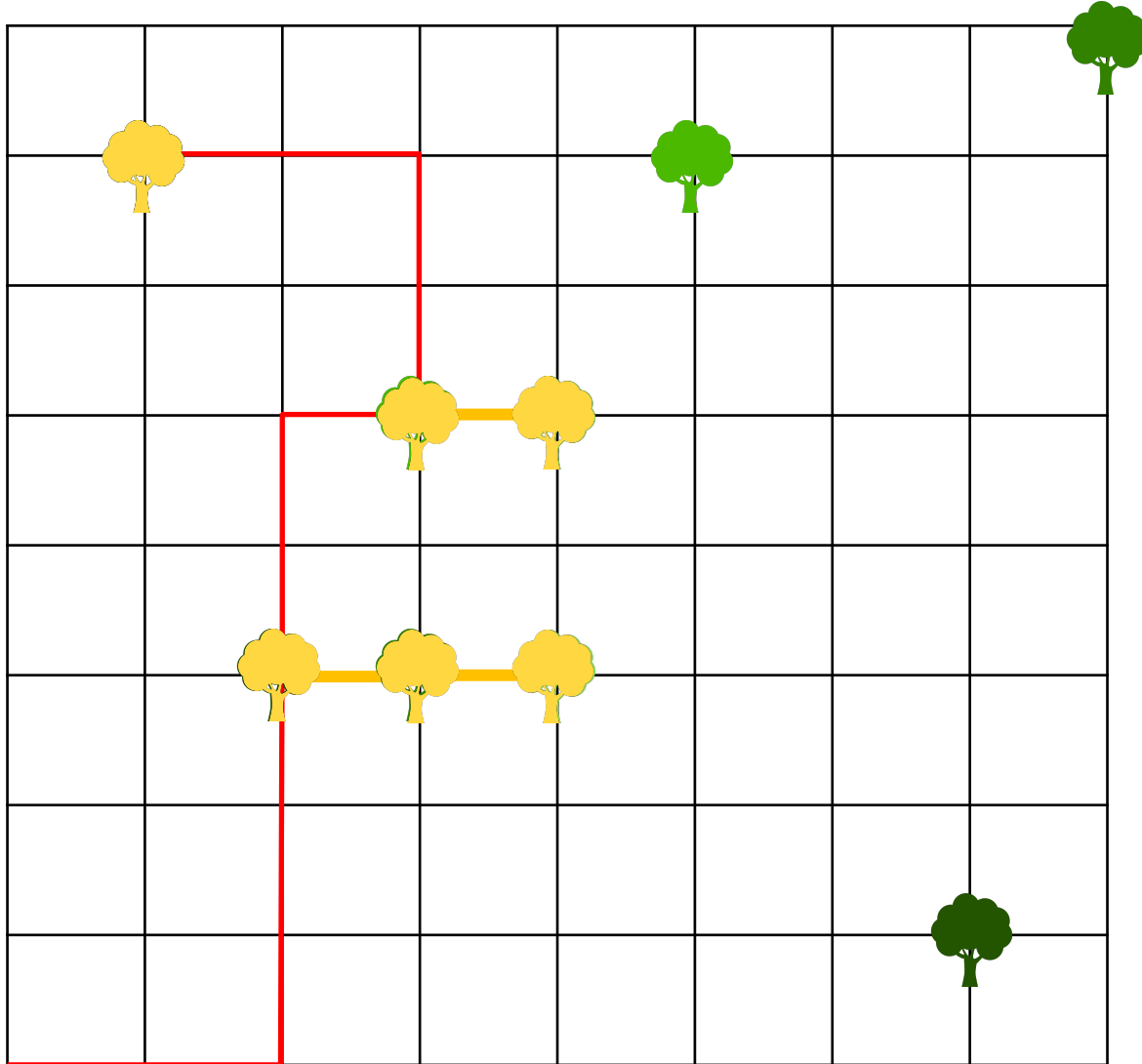
[You can now submit JAR archive as a solution of problems...](#)

Sat Mar 11 12:12:55 CET 2017

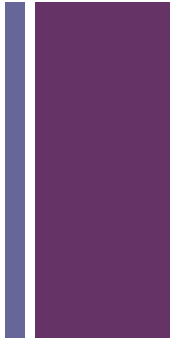
[We have added a discussion board to the Optil.io: ...](#)

Fri Mar 03 19:55:14 CET 2017

# + Lumberjack problem



- various cutting times
- various tree scores
- various tree weights
- limited lumberjack time

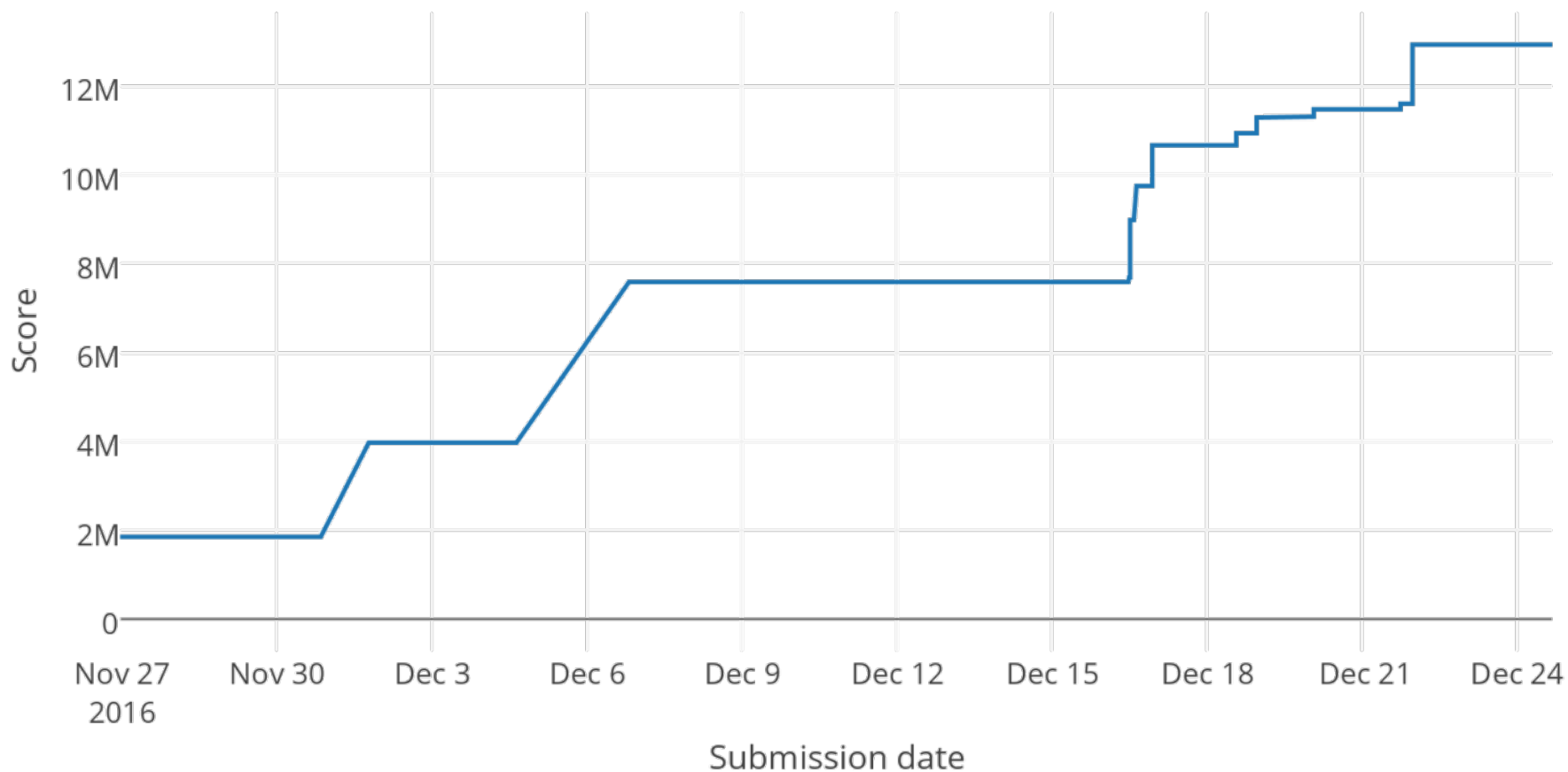




# + Results



Best score for test case #30



# + Submissions



## LUMBERJACK

By Krzysztof Wędrówicz<sup>1</sup>, Maciej Olszowy<sup>1</sup>

[DESCRIPTION](#)[RUNS](#)[MY RUNS](#)[STANDING](#)[SUBMIT](#)[DISCUSS](#)

**IE** = Internal Error, **TLE** = Time Limit Exceeded, **WA** = Wrong Answer, **RTE** = Runtime Error, **MLE** = Memory Limit Exceeded, **OLE** = Output Limit Exceeded, **PLE** = Processes Limit Exceeded, [more help...](#)

[First](#)[1](#)[Last](#)

#	SUBMIT DATE	SOURCE	COMPILATION	STATUS	TIME [S]	LANGUAGE	1	2	3	4	5	6
1	2017-02-24 19:13:46	<a href="#">Download</a>	<a href="#">Compilation Log</a>	Wrong Answer: 2 is incorrect action	0.00	PYTHON	WA	WA	WA	WA	WA	WA
2	2017-02-22 16:22:28	<a href="#">Download</a>	<a href="#">Compilation Log</a>	Runtime Error	0.00	PYTHON3	RTE	RTE	RTE	RTE	RTE	RTE
3	2016-12-21 14:46:46	<a href="#">Download</a>	<a href="#">Compilation Log</a>	Accepted	0.00	CPP	0.00	0.00	0.00	0.00	0.00	0.00
4	2016-12-19 08:57:20	<a href="#">Download</a>	<a href="#">Compilation Log</a>	Accepted	0.00	CPP	0.00	0.00	0.00	0.00	0.00	0.00
5	2016-12-17 18:50:32	<a href="#">Download</a>	<a href="#">Compilation Log</a>	Accepted	0.00	PYTHON3	0.00	18.00	18.00	0.00	0.00	0.00
6	2016-12-14 10:28:58	<a href="#">Download</a>	<a href="#">Compilation Log</a>	Accepted	0.00	CPP	0.00	0.00	0.00	0.00	0.00	0.00
7	2016-12-13 15:02:46	<a href="#">Download</a>	<a href="#">Compilation Log</a>	Runtime Error	3.30	CPP	OLE	OLE	OLE	OLE	OLE	OLE
8	2016-12-13 15:00:06	<a href="#">Download</a>	<a href="#">Compilation Log</a>	Wrong Answer: a is incorrect action	0.00	CPP	WA	WA	WA	WA	WA	WA
9	2016-12-13 13:49:44	<a href="#">Download</a>	<a href="#">Compilation Log</a>	Accepted	0.00	CPP	0.00	0.00	0.00	0.00	0.00	0.00
10	2016-12-13 13:48:15	<a href="#">Download</a>	<a href="#">Compilation Log</a>	Accepted	0.00	PYTHON3	0.00	18.00	18.00	0.00	0.00	0.00



# + Standing



## LUMBERJACK

By Krzysztof Wędrówicz<sup>1</sup>, Maciej Olszowy<sup>1</sup>

[DESCRIPTION](#)[RUNS](#)[STANDING](#)[SUBMIT](#)[DISCUSS](#)

**TLE** = Time Limit Exceeded, **WA** = Wrong Answer, **RTE** = Runtime Error, **MLE** = Memory Limit Exceeded, **OLE** = Output Limit Exceeded, **PLE** = Processes Limit Exceeded, [more help...](#)

[First](#)[1](#)[2](#)[→](#)[Last](#)

#	USER	LANGUAGE	SCORE	TIME [S]	1	2	3	4	5	6	7	8	9
1	swats	CPP	97.05	641.57	49.00	18.00	82.00	265,670.00	362,786.00	354,669.00	256,541.00	380,367.00	233,594.00
2	Luker	CPP	89.82	91.79	49.00	18.00	82.00	259,103.00	350,869.00	343,247.00	270,038.00	380,841.00	224,182.00
3	daras	CPP	86.61	88.69	49.00	18.00	65.00	250,649.00	339,336.00	330,227.00	254,117.00	380,367.00	198,973.00
4	jszymk	CPP	85.93	267.80	49.00	18.00	82.00	283,243.00	384,157.00	357,654.00	257,225.00	395,912.00	256,554.00
5	Vulwsztyn	CPP	85.85	28.38	49.00	18.00	82.00	264,773.00	339,336.00	330,227.00	270,038.00	380,367.00	224,182.00
6	pawelkuffel	CPP	85.46	407.35	49.00	18.00	80.00	275,690.00	358,917.00	329,891.00	268,255.00	369,730.00	243,307.00
7	MaciejMaciej	CPP	85.13	21.93	49.00	18.00	82.00	249,005.00	339,336.00	330,227.00	254,117.00	380,367.00	198,973.00
8	HiryBudaj	JAVA	83.52	399.95	49.00	18.00	82.00	262,463.00	338,160.00	290,365.00	259,673.00	370,720.00	187,113.00
9	woodpecker	CPP	82.42	18.65	49.00	18.00	82.00	275,690.00	364,597.00	295,184.00	231,513.00	370,720.00	227,578.00
10	Not4You	CPP	82.11	728.71	49.00	18.00	82.00	263,886.00	354,294.00	296,217.00	245,069.00	385,124.00	222,310.00
11	grazik	PYTHON3	78.95	385.99	49.00	18.00	82.00	249,005.00	338,160.00	283,109.00	259,673.00	370,720.00	179,952.00
12	u2ezi	PYTHON3	78.85	445.43	49.00	18.00	82.00	249,005.00	338,160.00	283,109.00	259,673.00	370,720.00	179,952.00
13	Adrmilab	CS	78.41	2.17	49.00	18.00	82.00	249,005.00	325,614.00	279,280.00	259,673.00	370,720.00	179,952.00
14	jaca	PYTHON3	76.21	544.52	49.00	18.00	82.00	270,326.00	339,527.00	294,310.00	230,539.00	368,194.00	189,888.00
15	pawel.bubak	PYTHON3	74.06	591.36	49.00	18.00	82.00	249,005.00	261,658.00	261,950.00	259,673.00	370,720.00	179,952.00
16	stachowiakpiotr6	PYTHON3	73.57	334.79	49.00	18.00	82.00	249,005.00	280,998.00	305,408.00	220,890.00	370,720.00	179,952.00

# + Why to choose Optil.io



- On-line Evaluation as a Service
- Completely free
- Diverse problem types
- Experience in organizing challenges:
  - 8000 evaluated submission
  - 6000 hours of algorithms execution
  - 3 contests organized, including 1 international

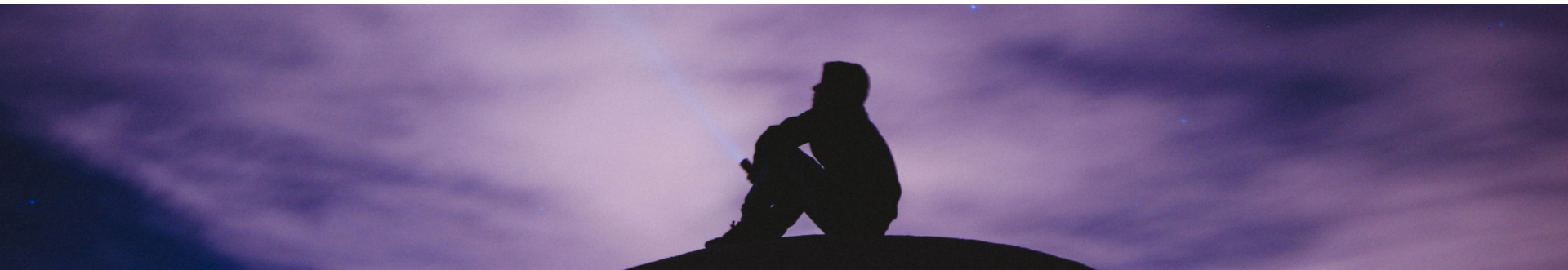




# + Brilliant Challenges



- Collecting interesting, applicable, optimization problems
- **1000 EUR** main prize, several special prizes, for researchers below 37 years old
- **Deadline: 15 September 2017**
- Scientific committee: Prof. Jacek Blazewicz, Prof. Erwin Pesch, Prof. Thomas Villmann, Dr Grzegorz Pawlak



# + The team



The National Centre  
for Research and Development





A photograph of a small, clear stream flowing through a dense forest. The water is captured with a long exposure, creating a soft, white, misty effect as it cascades over numerous large, dark rocks. The rocks are heavily covered in vibrant green moss. The surrounding forest floor is also lush with green moss and ferns, creating a rich, verdant scene. The lighting is soft and diffused, typical of a forest interior.

Do you have any questions?





# References



- [1] Wasik, S., Antczak, M., Badura, J., Laskowski, A., & Sternal, T. (2016, February). Optil. io: Cloud Based Platform For Solving Optimization Problems Using Crowdsourcing Approach. In *Proceedings of the 19th ACM Conference on Computer Supported Cooperative Work and Social Computing Companion*(pp. 433-436). ACM.
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- [3] Hanbury, A., Müller, H., Balog, K., Brodt, T., Cormack, G. V., Eggel, I., ... & Krithara, A. (2015). Evaluation-as-a-Service: Overview and outlook. *arXiv preprint arXiv:1512.07454*.
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- [5] Szostak, N., Wasik, S., & Blazewicz, J. (2016). Hypercycle. *PLoS computational biology*, 12(4), e1004853.
- [6] Swan, J., Adriaensen, S., Bishr, M., Burke, E. K., Clark, J. A., De Causmaecker, P., ... & Kocsis, Z. A. (2015, June). A research agenda for metaheuristic standardization. In *Proceedings of the XI Metaheuristics International Conference*.