The Labor Day Weekend Programming Project

managed by

Tim Sheard, Magnus Carlsson, Iavor Diatchki, Thomas Hallgren, Nathan Linger, and Thomas Nordin

OGI School of Science & Engineering

Oregon Health & Science University

The Labor Day Weekend Programming Project

160 highly motivated teams of programmers, about 3 programmers per team

$\times$

3 days of work

$\times$

50 percent productivity (i.e., not sleeping or eating)

$=$

10 man years of programming effort

The Labor Day Weekend Programming Project

What was the result?

- A new industrial-strength Haskell compiler?
- Complete with integrated programming environment, and three different GUI libraries?
- On top of a new, strongly typed, operating system?

NO! Unfortunately, all 160 teams were assigned the *same* sub task!

The Fifth ICFP Programming Contest

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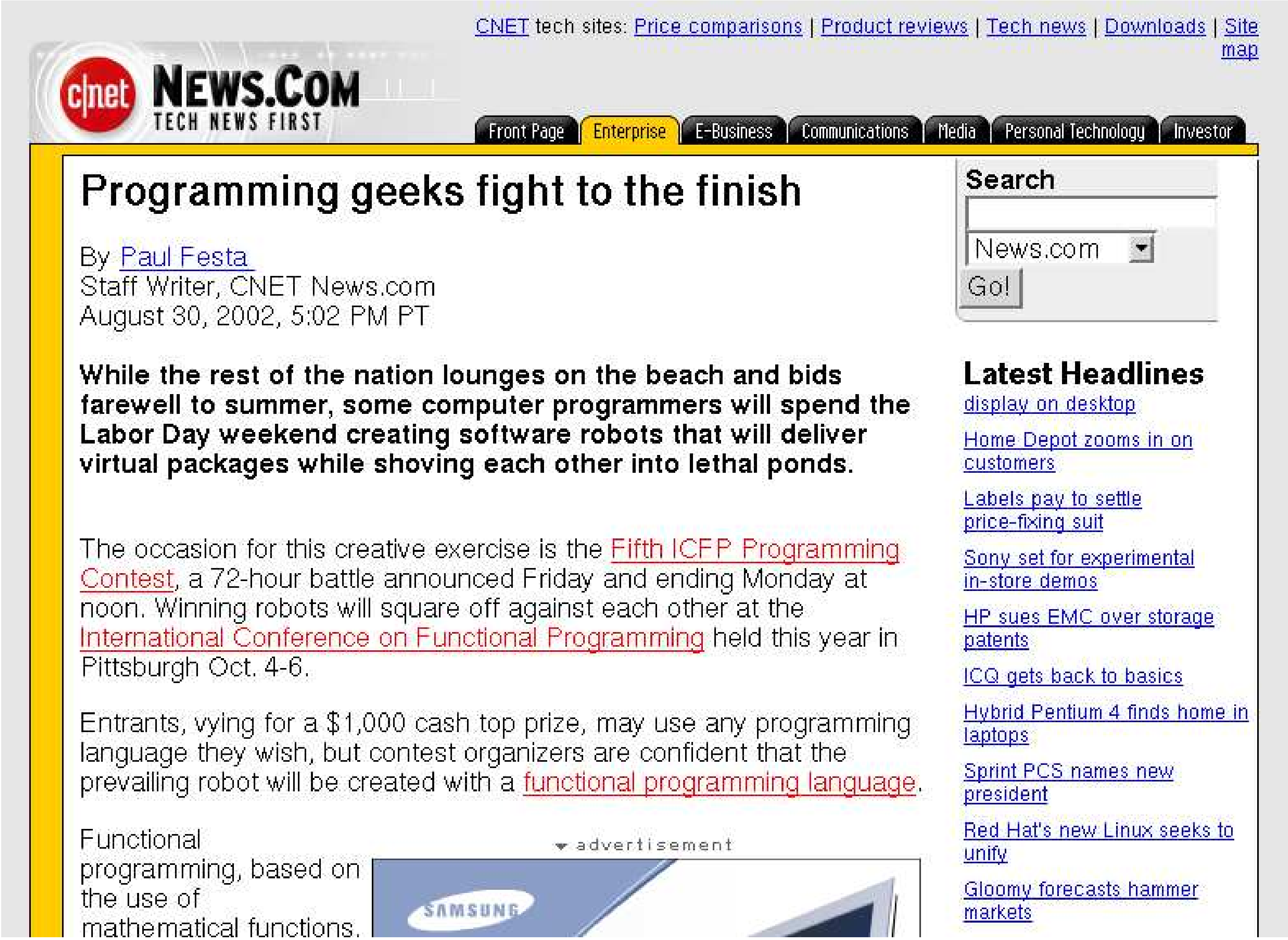
The Announcement

The News



Programming geeks fight to the finish

By Paul Festa
Staff Writer, CNET News.com
August 30, 2002, 5:02 PM PT

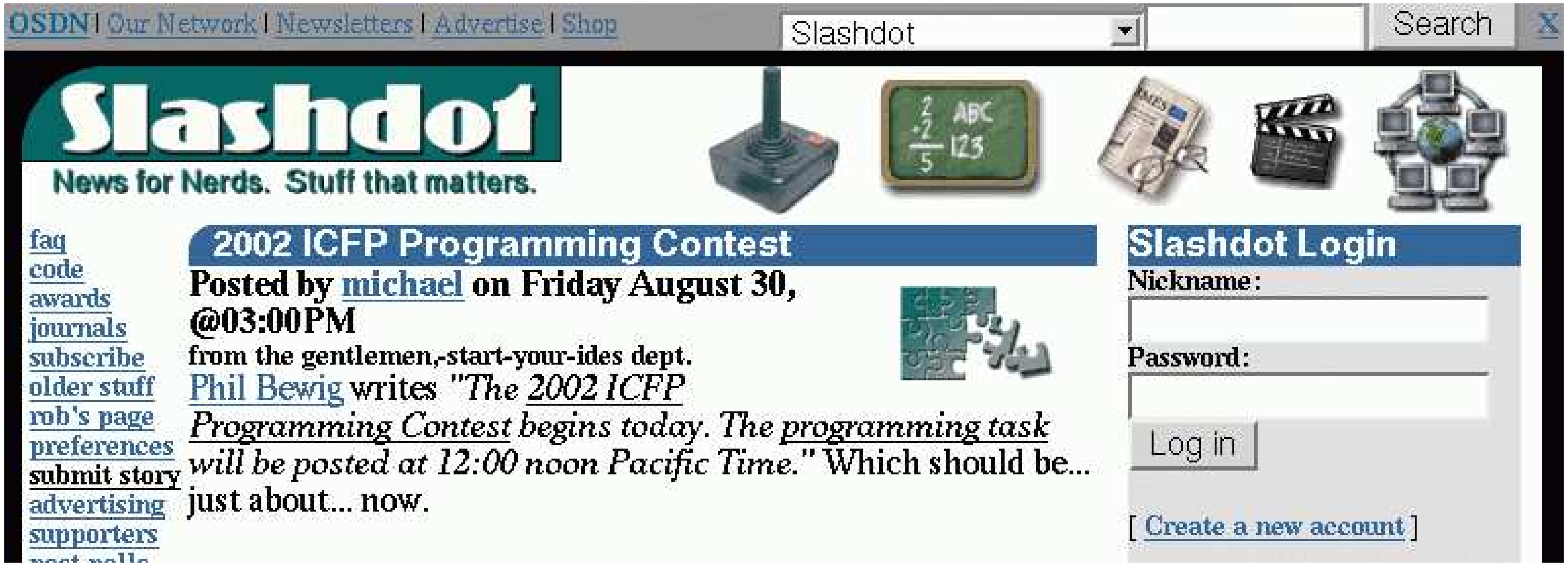
While the rest of the nation lounges on the beach and bids farewell to summer, some computer programmers will spend the Labor Day weekend creating software robots that will deliver virtual packages while shoving each other into lethal ponds.

The occasion for this creative exercise is the Fifth ICFP Programming Contest, a 72-hour battle announced Friday and ending Monday at noon. Winning robots will square off against each other at the International Conference on Functional Programming held this year in Pittsburgh Oct. 4-6.

Entrants, vying for a $1,000 cash top prize, may use any programming language they wish, but contest organizers are confident that the prevailing robot will be created with a functional programming language.

Functional programming, based on the use of mathematical functions,

The News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2002 ICFP Programming Contest
Posted by michael on Friday August 30, @03:00PM
from the gentlemen,-start-your-ides dept.
Phil Bewig writes "The 2002 ICFP Programming Contest begins today. The programming task will be posted at 12:00 noon Pacific Time." Which should be... just about... now.
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The Fine Print: The following comments are owned by whoever posted them. We are not responsible for them in any way.

Unlimited Bragging Rights (Score:1)
by G0SP0DAR on Friday August 30, @03:03PM (#4172068)
(User #552303 Info | http://slashdot.org/)

Does that unclude a carte blanche to exempt all of my extremely boring required programming classes in school?

Very cool task this year (Score:1)
by jat850 on Friday August 30, @03:03PM (#4172071)
(User #589750 Info)

Now that is a very cool-sounding task.

One of the classes at my university last year had to write a simulation like this using Eiffel. Ick!

Re:Very cool task this year (Score:1)
by cicatrix1 ('mbell1' 'at' 'ilstu.edu') on Friday August 30, @03:09PM (#4172131)
(User #123440 Info | http://www.cicatrix.net/)

What's wrong with Eiffel? I mean once you get past the $$$ issue of getting it...

Re:Very cool task this year (Score:1)
by jat850 on Friday August 30, @03:16PM (#4172182)
(User #589750 Info)

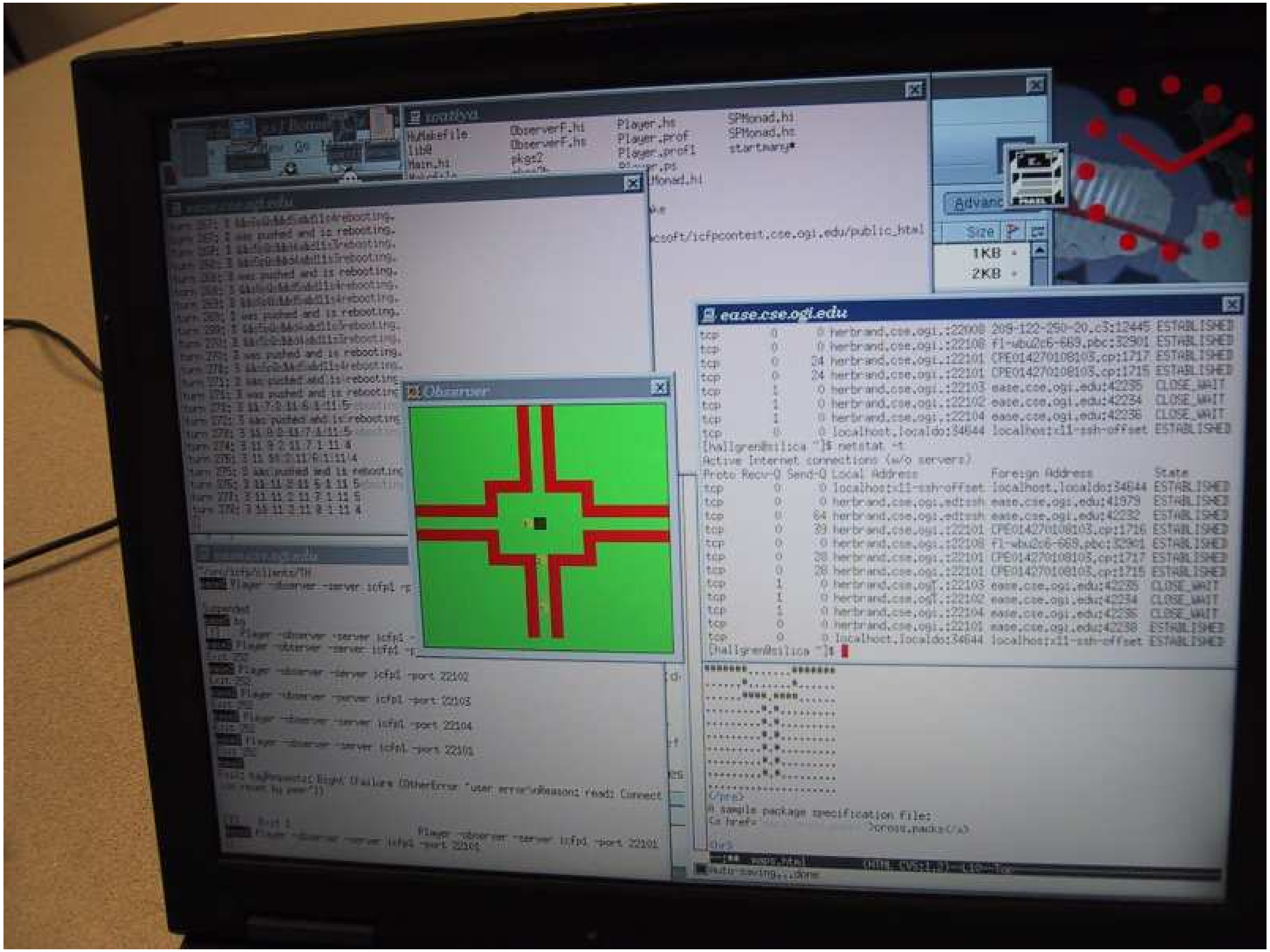
I think I grew up on a terrible, terrible Eiffel IDE. Besides that, I found the language really unintuitive after having first programmed in C and C++. Personal preference, but god help me if I ever have to program in that language again :) (or fortran!)

Eiffel (Score:2)

The Bliss

The Frenzy

The First Steps



The Task

To write a program that controls a robot to find and deliver packages in a world with competing robots.

Features of the robot world:

- Square tiles with walls, water, and bases.
- Initially, packages can be found on the bases.
- Each package has a given weight and destination.
- The robot has a fixed carrying capacity.
- When delivering a package, you get points equal to its weight.

Example

Pushing

What about the water?

- You drown if you step on water.
- You can *push* other robots.

Example 1

Example 2

Pushing

Robots cannot be pushed through walls.

Implications:

Example 1

Example 2

```
  File "runme", line 49, in move
    self.set_y(self.y_pos - 1)
TypeError: unsupported operand type(s) for -: 'NoneType' and 'int'
```

Pushing and bidding

- **Bidding** is used to express urgency of move: highest bid moves first.
- A finite amount of bidding money is initially assigned each robot.

Example with 20 players starting at the same square.

Contributed maps

From **Team MonkeyJuicers**

Others responded with ... maps!

From **Funktion im Kopf der Mensch**, Vienna

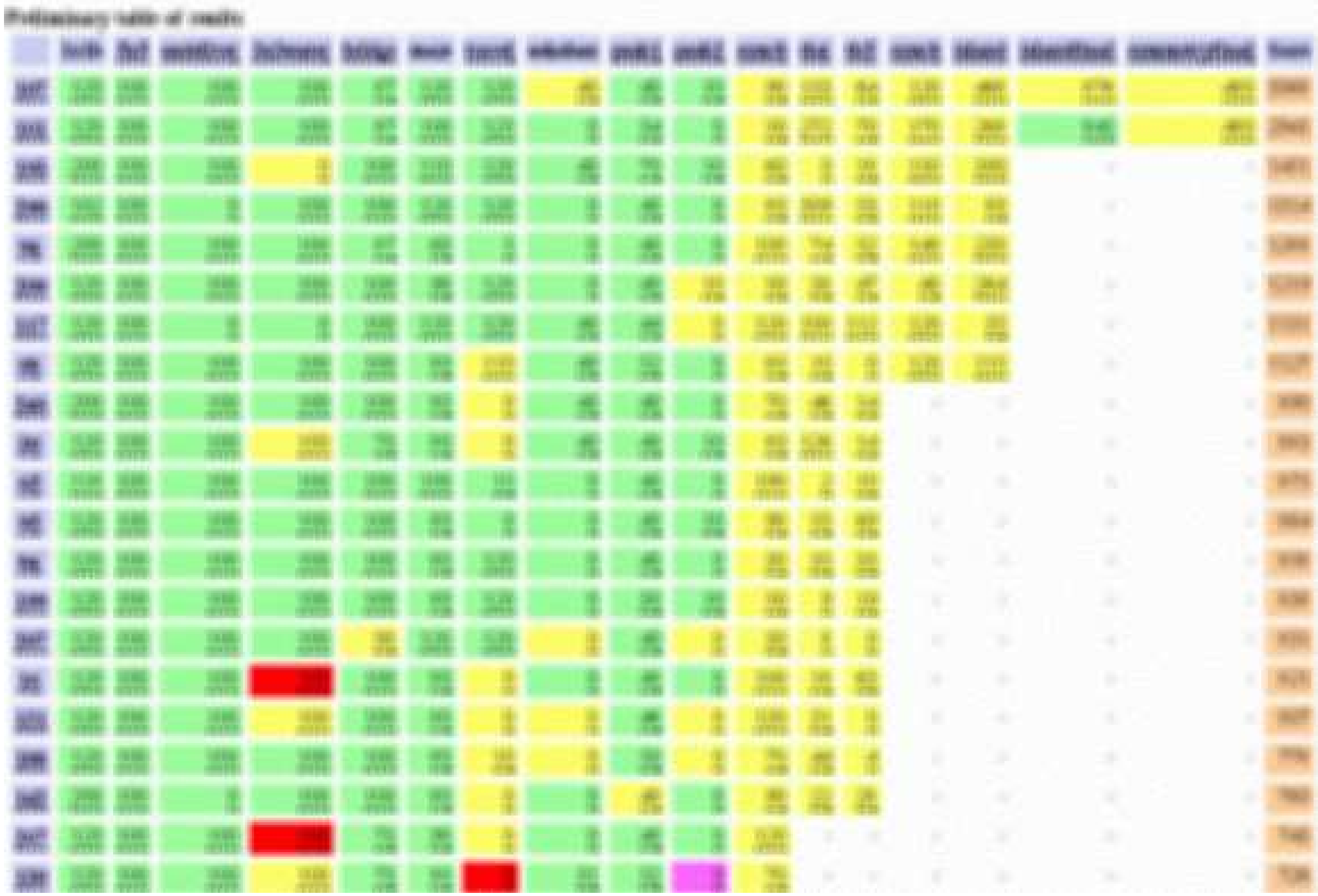
From **Funktion im Kopf der Mensch**, Vienna

Scoring tables

- **Initial tests:** single player, against instrumented opponents.
- **Group test 20:** Top 20 on larger maps.
- **Group test 8:** Top 8 in symmetric scenarios.

Scoring tables

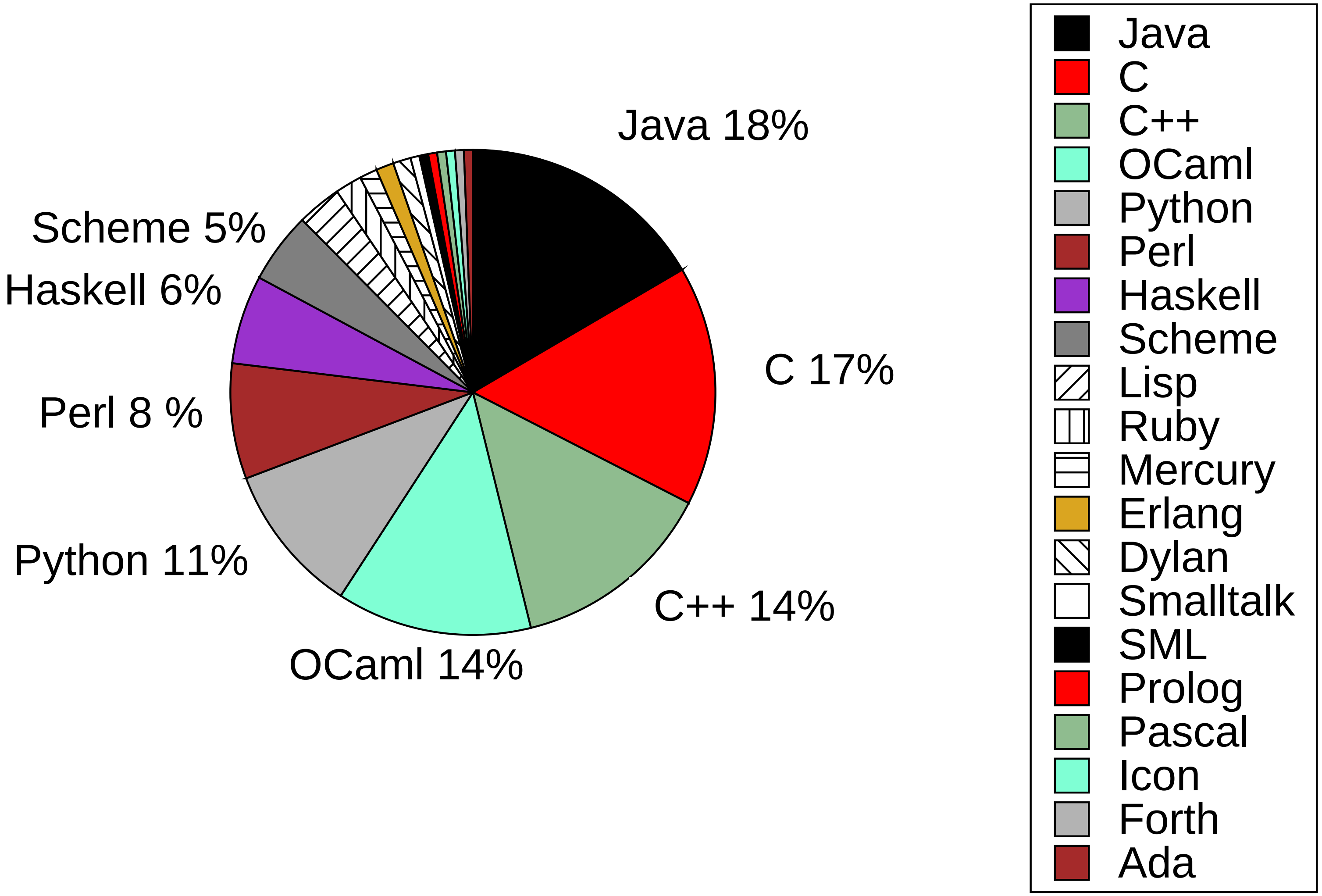
- **Final:** Top 2 in symmetric scenarios.



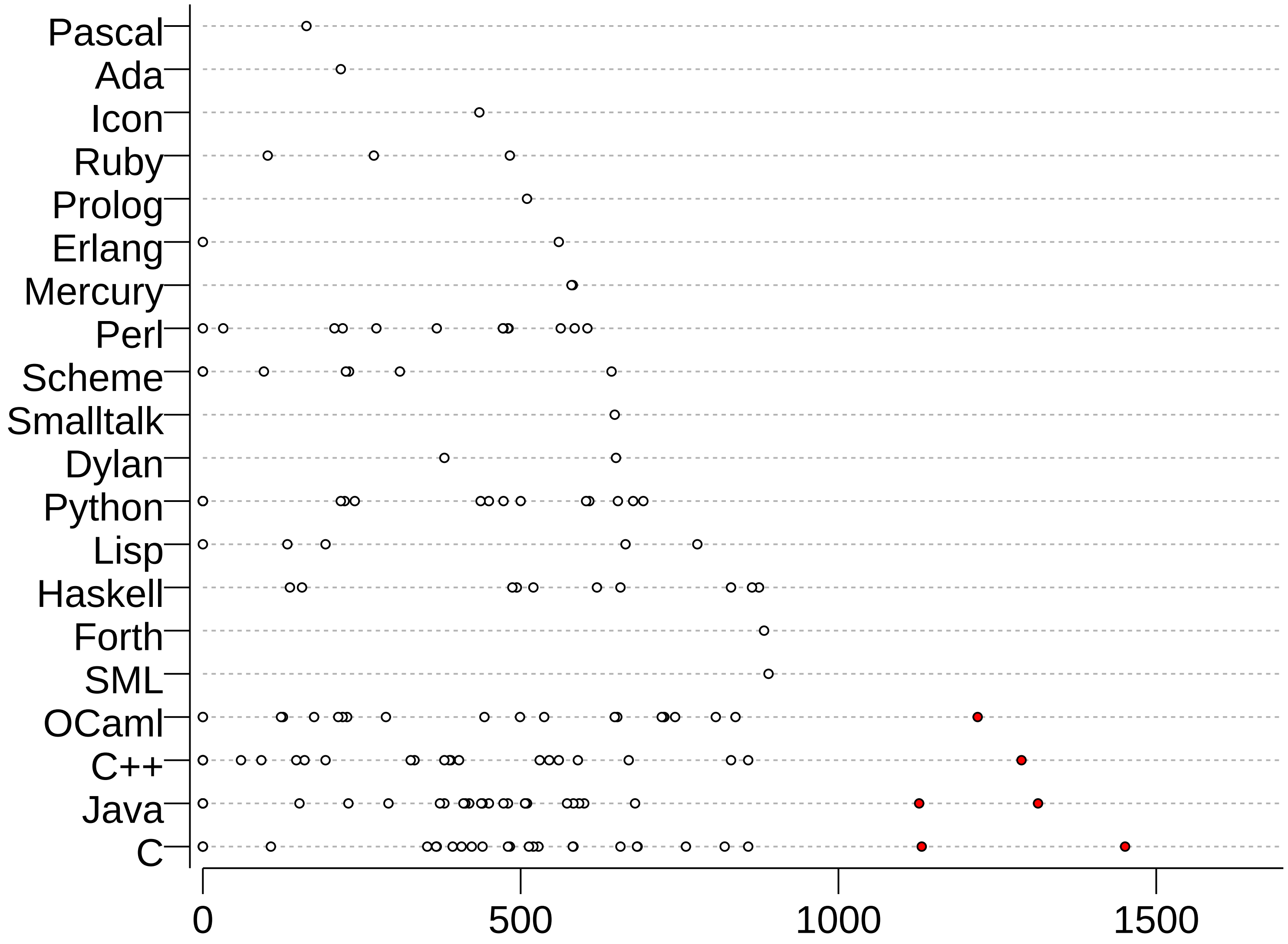
Some statistics

Minimum bid	$ -1037
Maximum bid	$ 1992
Total money spent	$ 1,214,584
Total number of robot actions	945,970
Money spent per action	$ 1.3
Total CPU time	several days

Programming languages



Programming languages: scoring



The Lightning Division

(Submissions within 24 hours.)

1	OaSys	Python	2853
2	TeamGHC	Haskell	2642
3	Simon Funk	C	1035
4	Superficial Intelligence Labs	Perl	936
5	Nederwiet	C++	665
6	Aqua Team Hunger Farce	Python	453
7	Team Xoltar	Python	153
8	NetDragons.com	Pascal	47

The **Judges' Prize** goes to

OaSys and **Terry Stewart**, Carlton University

Terry Stewart

The Fifth ICFP Programming Contest

Judges' Prize is awarded to: Team OaSys
For their entry OaSys
Terry Stewart.

"Terry Stewart is an extremely cool hacker."

Tim Sheard, Contest Organizer

Mitch Wand, General Chair, ICFP

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The 2002 International Conference
on Functional Programming

Top 8 contributions

?	Radical Too	C
?	TAPLAS	OCaml
3	Berkeley State Machines Incorporated	C
4	Ephibian Harbinger	Java
5	Nederwiet	C++
6	MIMteam	OCaml
7	Stephen Villee	C
8	tooTiredToBeClever	Java

The Finals

107 **TAPLAS**, University of Tokyo | 161 **Radical Too**, Stanford University

Sample final round 1

Sample final round 2

1	TAPLAS	Objective Caml	3068
2	Radical Too	C	2941
3	Berkeley State Machines Incorporated	C	1451
4	Ephibian Harbinger	Java	1314
5	Nederwiet	C++	1288
6	MIMteam	OCaml	1219
7	Stephen Villee	C	1131
8	tooTiredToBeClever	Java	1127

Second Prize

Radical Too — C

Daniel Adkins, Josef Rokicki, and Tomas Rokicki

Standford University

The Fifth ICFP Programming Contest

Second Prize is awarded to: Team Radical Too
For their entry lessobliv
Daniel Adkins, Josef Rokicki, and Tomas Rokicki.

"C is a fine programming tool for many applications."

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Tim Sheard, Contest Organizer

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Mitch Wand, General Chair, ICFP

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on Functional Programming

First Prize

TAPLAS — OCaml

Yutaka Oiwa, Eijiro Sumii, Tatsurou Sekiguchi

University of Tokyo

The Fifth ICFP Programming Contest

First Prize is awarded to: Team TAPLAS
For their entry Rog-O-Matic III
Yutaka Oiwa, Eijiro Sumii, and Tatsurou Sekiguchi.

"O'Caml *is the programming tool of choice for discriminating hackers.*"

Tim Sheard, Contest Organizer

Mitch Wand, General Chair, ICFP

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The 2002 International Conference on Functional Programming

Credits

Robby Findler — early robot game suggestion

Iavor Diatchki — Simulator, challenge description

Thomas Hallgren — Robot controllers, visualization, web pages, table generation, ...

ICFP — Our sponsor!

Our participants

THANK YOU!

Next year's organization — volunteers???

`icfpcontest.cse.ogi.edu`