

**CO₂ SPIES
IN THE SKY**

A private satellite
tracks greenhouse
gases **P. 09**

**LIGHT WAVES
WITH A TWIST**

They can carry
twice the data
P. 34

**PREVENTING RADIO
INTERFERENCE**

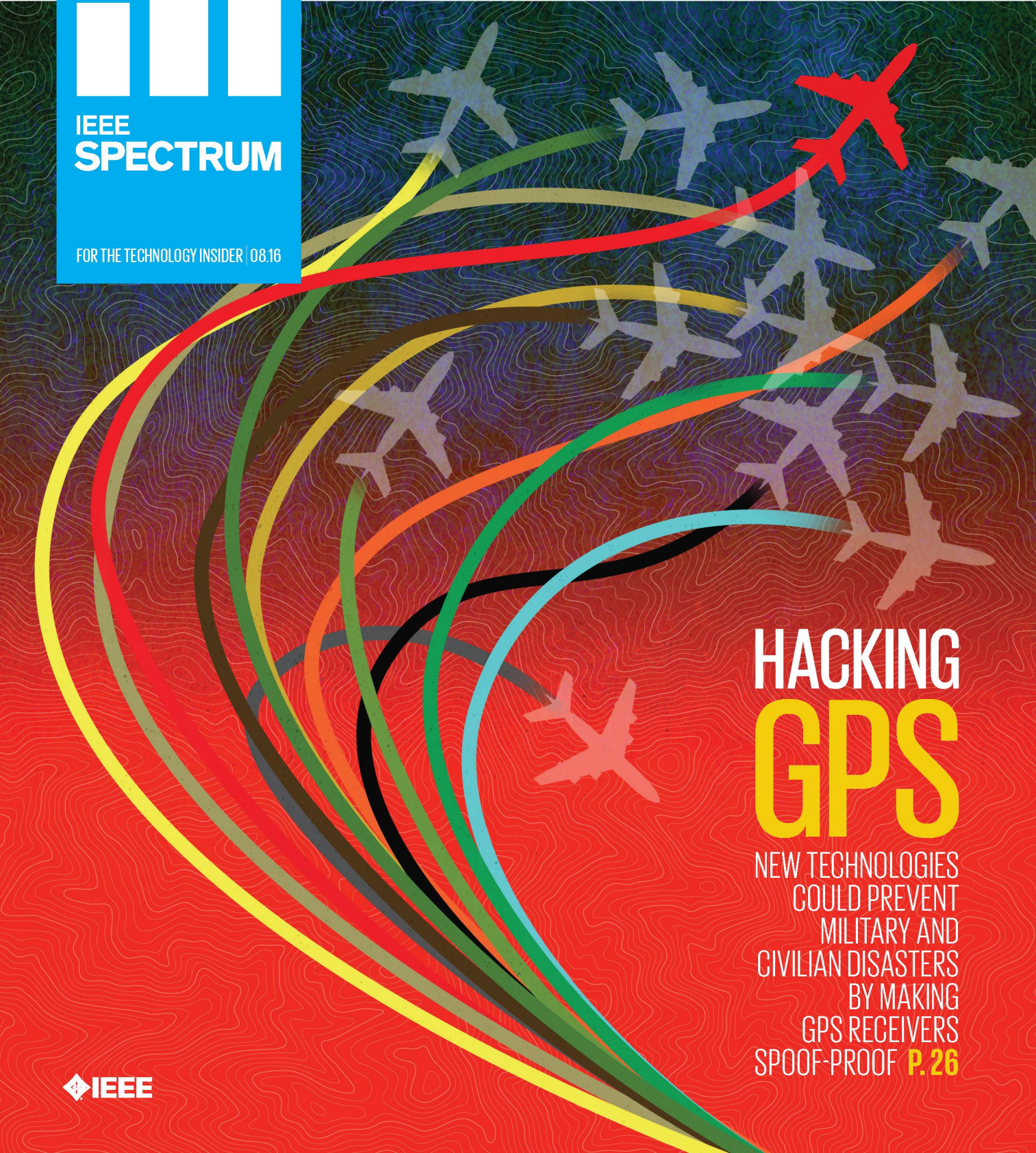
It's getting harder,
but the tech is
getting better **P. 40**

**ENVISIONING THE
SMART HIGHWAY**

One inventor's
obsession—in 1925
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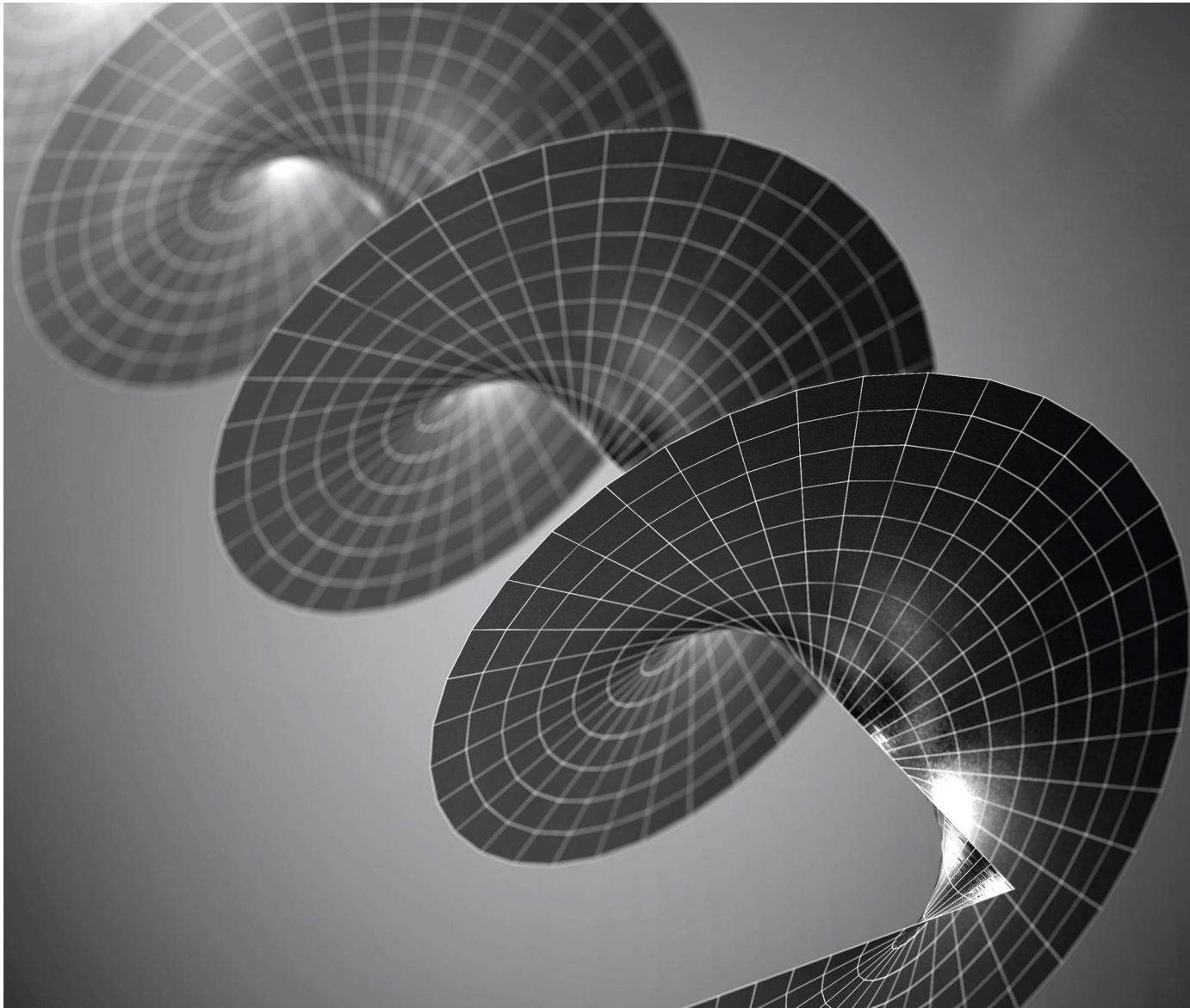
IEEE
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FOR THE TECHNOLOGY INSIDER | 08.16



HACKING GPS

NEW TECHNOLOGIES
COULD PREVENT
MILITARY AND
CIVILIAN DISASTERS
BY MAKING
GPS RECEIVERS
SPOOF-PROOF **P. 26**



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COMMUNICATION WITH A TWIST

A little-exploited property of light could push data transmission to new heights.

BY ALAN E. WILLNER

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GPS Lies

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By Mark L. Psiaki
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Today's digital radios still struggle with a very old problem.

By Mitchell Lazarus

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A 1920s invention might have cut traffic deaths, but it never took hold.

By Lee Vinsel

On the cover Illustration for IEEE Spectrum by Brian Stauffer



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By Susan Hassler

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Online

Spectrum.ieee.org

Top Programming Languages
IEEE Spectrum's annual interactive ranking of the top programming languages is now available. Drawing from 10 sources, including GitHub, Google, and Stack Overflow, you can use filters and customizable weightings to find out what languages employers are demanding, or what's bubbling up from open source:
<http://spectrum.ieee.org/tpl0816>

ADDITIONAL RESOURCES

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Available at spectrum.ieee.org/webinar

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- ▶ Essential Technologies for smart Machine Control (sMC)—Available On Demand
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The Institute

Available at theinstitute.ieee.org

- ▶ **DIGITAL CASHIERS** MasterCard is working to allow consumers to make payments from gadgets, wearables, and even robots.
- ▶ **GERMANY'S FIRST BROADCAST** On 22 December 1920, Germany transmitted its first radio broadcast—a Christmas concert—from the town of Königs Wusterhausen. This breakthrough was recently honored with an IEEE Milestone.
- ▶ **LOOKING TOWARD THE FUTURE** The first IEEE International Rebooting Computing conference, to be held from 17 to 19 October in San Diego, will explore how to reinvent computing technology. The IEEE Technology Time Machine, from 21 to 22 October, will be held at the same venue and will look at future technology directions.

IEEE SPECTRUM

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