Technology Review magazine as one of the world's top young innovators for 2011.

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Gert Lanckriet Recognized by MIT Technology Review as One of World's Top Young Innovators

University of California, San Diego Jacobs School of Engineering Professor Gert Lanckriet has been recognized by MIT *Technology Review* magazine as one of the world's top young innovators for 2011. The magazine's TR35 Honoree list recognizes the world's top innovators under the age of 35, spanning energy, medicine, computing, communications, nanotechnology, and other emerging fields.

Electrical and Computer Engineering Professor Gert Lanckriet. Credit: UC San Diego Jacobs School of Engineering

Lanckriet is a professor in the Department of Electrical and Computer Engineering at the UC San Diego Jacobs School of Engineering. He is being honored for his research that promises to significantly improve how people search, discover and recommend music. Currently, Lanckriet is investigating intelligent algorithms that will enable mobile phones and music players to automatically figure out what kind of music you listen to based on your location and activity. For example, when you're walking out of your office, or in your car driving home, it will play music that makes you feel happy. Going running? It will play something upbeat. Relaxing and reading a book at home? Then maybe it's time for more chill music.

Lanckriet's work combines convex optimization and machine learning to automatically analyze and index very large music collections. A revolution in music production and distribution has made millions of songs instantly available to virtually anyone on the planet through online programs and services like iTunes and MySpace. Simultaneously, the demand for music has driven the latest revolution in consumer electronics such as MP3 players and the integration of

music player capability in smart phones. As a result, novel music search and recommendation technologies are poised to have a broad societal impact by helping millions of users find and organize the desired content.

Technology Review's annual list of 35
INNOVATORS UNDER 35

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omputers to classify music
California, San Diego

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"Born This Way" a happy song? Is "Bohemian Rhapsody" sad? Gert Lanckriet wants be able to tell. Then people could search for tunes that match a particular mood or tyle, and an online store could make better recommendations.

associate professor in the Department of Electrical and Computer Engineering at the California, San Diego, started by having his computers analyze a collection of 500 that human judges had categorized in six ways—by genre and tempo, for example. w piece of music not in the database, the computer uses that training to infer how a characterize it. Lanckriet continues to train the system through a Facebook game launched in 2009. Players listen to snippets of music and win points if they agree rity of their fellow users; the results are fed into Lanckriet's software.

ware gets some more fine-tuning, Lanckriet plans to let it crawl the Web like a search atically classifying the huge amount of music available online. He's also exploring sensors in smart phones to cue up exactly the sort of music someone is in the mood ne's accelerometer detects that the user is exercising, it could choose something le sitting in a quiet room at night might lead it to choose something mellower.

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g Professor Gert Lanckriet photographed by Gregg
MIT Technology Review's annual list of 35 Innovators
Technology Review Article

"Gert has an amazing ability to apply interesting machine-learning models to real-world problems centered around music," said Malcolm Stanley, a principal scientist at Yahoo! Research and consulting professor at the Center for Computer Research in Music and Acoustics at Stanford University. "He has single-handedly raised the bar in the music-information retrieval world by his theories."

Lanckriet joined the Jacobs School's Department of Electrical and Computer Engineering in 2005, where he also heads the Computer Audition Laboratory and an interdepartmental group on Computational Statistics and Machine Learning. You can read more about his research in some of our past coverage here and here. Or check out this YouTube video.

Lanckriet was selected as a member of the TR35 class of 2011 by a panel of expert judges and the editorial staff of Technology Review, who evaluated more than 300 nominations. He will join other TR35 honorees in discussing their achievements at the emtech MIT 2011 conference, taking place at the MIT Media Lab in Cambridge October 18-19, 2011. All of the TR35 winners for 2011 will be featured the September/October issue of *Technology Review* and online at www.technologyreview.com/tr35/.

"Technology innovation is key to driving growth and progress in the areas of research, medicine, business and economics," said Jason Pontin, editor-in-chief and publisher of Technology Review. "This year's group of TR35 recipients is driving the next wave of transformative technology and making an impact on the way we live, work and interact. We look forward to profiling and working with these technology leaders each year, and watching their continued advancement in their respective fields."

UC San Diego computer scientists and engineers are no strangers to the Technology Review's annual list of young innovators:

- 1999 Lawrence Saul, computer science professor
- 1999 Natalie Jeremijenko UC San Diego California Institute for Telecommunications and Information Technology new-media artist
- 2003 Sangeeta Bhatia, then a bioengineering professor
- 2003 Christophe Schilling, former bioengineering graduate student
- 2004 Serge Belongie, computer science professor
- 2005 Trey Ideker, bioengineering professor
- 2006 Sumeet Singh, former computer science graduate student
- 2007 Yoshi Kohno, former computer science graduate student

Additional information about past and present TR35 winners and judges is available at www.technologyreview.com/tr35/. For more information about emtech MIT 2011 please visit: http://www.technologyreview.com/emtech

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