ISLAMABAD: In these photographs taken on May 9, 2016, Pakistani students and team members of Robotics and Intelligence Systems Engineering (RISE) program their robot football players in the engineering department of the National University of Sciences and Technology. — AFP

# Rise of machines: Pakistan roboteers hunt soccer glory

**ISLAMABAD:** The little striker wearing a crescent moon and star jersey lines up his penalty and kicks right, netting his goal as the keeper dives the wrong way and hits the ground yelping in pain. Both players are teammates practicing to represent Pakistan in a major world football tournament. Unlike their low-ranked flesh-and-blood counterparts, however, these are advanced robots whose programmers are set to compete against students from the world's top universities as they look to showcase what their country can do in the world of Artificial Intelligence.

Students at Pakistan's National University of Science and Technology (NUST) will this year for the first time send a team to the annual RoboCup, an event featuring 32 universities that will be held in Leipzig, Germany from June 27 to July 4. The six machines are NAO humanoid robots purchased from France's Aldebaran Robotics at a cost of roughly $17,000. It is in fact the third year that NUST, Pakistan's premier engineering institute, has qualified for the prestigious cup. But a lack of travel funds has meant their dream of representing their country on the world stage had to be placed on hold - until now.

"Our dream came true this year when the university managed to allocate 1.5 million rupees ($14,336) for the team's travel to Germany," Dr Yasar Ayaz, head of the department of Robotics and Artificial Intelligence told AFP. The amount is enough only for three students instead of all 10 involved in the project to travel to Germany and participate in the event, and the university is still hoping to close the gap with funding from sponsors. "We are not disheartened...something is better than nothing," Ayaz said.

**Beating Humans**

The first robot football league was started in 1993 by a group of Japanese researchers and named the Robot J-League, after the Japanese professional league. Following a surge of outside interest, the initiative was extended into a international project and the Robot World Cup Initiative, or "RoboCup", was conceived. The first edition was held in Osaka in 1996. Its stated aims: "By the middle of the 21st century, a team of fully autonomous humanoid robot soccer players shall win a soccer game, complying with the official rules of FIFA, against the winner of the most recent World Cup."

For the time being, however, that goal appears a long way off. Students tap away at their laptops in their university lab, programming their code. Zain Murtaza, who leads the ten-member team, sets up the cute robots on their nine-by-six feet pitch, and the action begins. Each robot has two cameras on their faces guiding their movements. "The cameras take pictures and feed them to the computers installed inside, which help them decide about their movements and recognise movements of the other players," Ayaz explains.

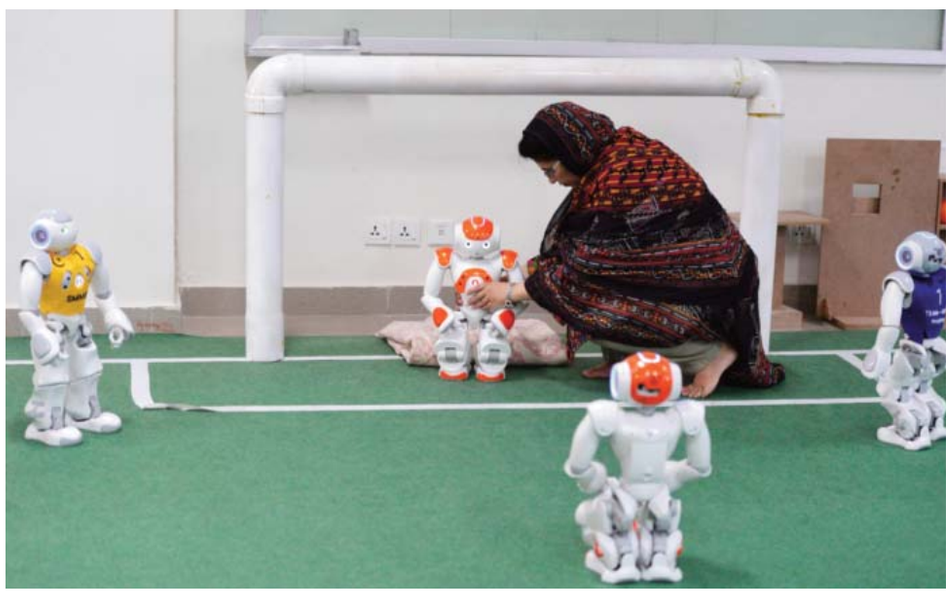
They walk around the field with short staccato movements, pulling their legs back like a golfer lifts his club before unleashing an ungainly kick that sends the plastic orange ball rolling along the floor. Mishaps and tumbles are frequent, and the process makes for awkward viewing. Humans are allowed to make minor interventions, but the robots' movements are entirely their own, with results hinging on how cleverly the machines are programmed to carry out their roles. The work is a labor of love for the Pakistan team.

"This is a whole new world... I want to teach robotics to students and to tell them how interesting it is to interact with the robots," says Murtaza, who has completed his Masters in the subject and has plans to complete a doctorate. "These are my babies," he adds.

**Autonomous Future?**

Pakistan's progress in the field of AI mirrors its advancement in the IT sector, where the South Asian giant of 200 million people is considered a mid-tier player - particularly for software outsourcing. Cheap labor, a relatively well-educated middle-class that speaks English and has access to markets in North America helped exports grow to $2.2 billion in the fiscal year 2014. According to Ayaz, advancements in AI could also prove valuable to Pakistan's small manufacturing base, in addition to being the next major area of scientific research.

Earlier this month Internet giant Google announced it was setting up a dedicated AI research group to focus on machine learning - a field of computer science that gives computers the ability to learn without being explicitly programmed. Elsewhere, automakers like Honda are devoting resources to develop autonomous driving technologies. Computing is also a field where increasing numbers of Pakistani women, who have traditionally steered clear of science and technology jobs, see a future for themselves. "There are a lot of prospects for us to excel in the field of robotics as we pursue higher studies in this subject," Asma Ashfaq, one of four female members of the ten-strong team. —AFP



# Cisco provides data center visibility and analysis in real time

**KUWAIT:** Cisco announced Cisco Tetration Analytics, a platform designed to help customers gain complete visibility across everything in the data center in real time- every packet, every flow, every speed. Cisco Tetration Analytics gathers telemetry from hardware and software sensors, and then analyzes the information using advanced machine learning techniques. Tetration addresses critical data center operations such as policy compliance, application forensics, and the move to a whitelist security model. Through continuous monitoring, analysis, and reporting, the Tetration Analytics platform provides IT managers with a deep understanding of the data center that will dramatically simplify operational reliability, zero-trust operations and application migrations to SDN solutions and the cloud.

"Gaining much deeper visibility into the data center and automating actionable analysis across a company's infrastructure marks a critical technology advancement in building secure digital business models like cloud, mobile and IoT," said Mike Weston, Vice President, Cisco Middle East. "We believe the insights we gain from applications and the data center overall will enhance existing software solutions and drive the future development of new advanced software that will improve business operations, efficiency and customer experiences."

**With Cisco Tetration Analytics, organizations can:**

* Understand what applications are dependent on each other throughout their data center and into the cloud

* Move from reactive to proactive: make informed operational decisions and validate the effect of policy changes before they are implemented

* Search across billions of flows in less than a second using Tetration's forensics search engine and user interface

* Continuously monitor application behavior to quickly identify any deviation in communication patterns

**The Challenge**

There is currently no single tool designed to collect consistent telemetry across the entire data center and analyze large volumes of data in real time, at scale. Up till now, organizations have performed fragmented tasks without the correlation necessary to address operational issues comprehensively. As a result, these complex, slow and disjointed tools are costly in terms of time, money and lost opportunity. IT managers today are hampered by a lack of visibility and knowledge.

* They lack pervasive visibility into data center infrastructure and how applications are interacting, which results in operational challenges.

* They are unable to migrate applications to the cloud or set up a Disaster Recovery site effectively with precision and speed.

* They're unable to adopt a zero trust model because they lack the critical information and resources to implement or maintain it.

**Mike Weston - Vice President - Cisco Middle East**

**The Solution: Cisco Tetration Analytics Platform**

Tetration is designed to help enable pervasive and complete visibility across the data center using either server software sensors that require very low overhead, network hardware sensors that monitor packet-by-packet meta data, or both combined for the most complete solution. Tetration executes advanced data center analytics in real time and presents actionable analysis with easy to understand visuals. Tetration delivers information critical for data center operations, such as: application insights, automated white list policy recommendations, policy simulation and impact analysis, compliance management, and network flow forensics.

Tetration is like a time machine for the data center, enabling organizations to rewind what has happened in the past, view what is happening in the present in real time, and model what could happen:

* Model a change before it's executed to understand the impact on applications to enable informed operational decisions;

* Validate that policy changes have actually been applied and taken full effect;

* Do real-time and historical policy simulation - replay what happened in the network at any time, with long term data storage capabilities.

**How it works**

Software sensors are installed on end hosts: either virtual machine or bare metal servers. In the first Tetration release, software sensors support Linux and Windows server hosts, while hardware sensors are embedded in the ASICs of Cisco Nexus 9200-X and Nexus 9300-EX network switches to collect flow data at line rate from all the ports. A single Tetration appliance will monitor up to one million unique flows per second. Both software and hardware sensors communicate the flow information in real time to the Tetration Analytics platform. The platform can be installed in any data center with any servers and any network switches.

The Tetration platform is a "one-touch" appliance: the servers and switches are prewired and the software is pre-installed. Setting up Tetration is easy: answering a few questions regarding the data center environment allows the Cluster to be configured. The big data complexity is hidden- no special big data expertise is needed to deploy or operate Tetration. Available in July 2016, the first Tetration platform will be a full rack appliance that is deployed on-premise at the customer's data center.

**Cisco Advanced Services**

Although Tetration Analytics is easy to deploy in just hours to start gaining immediate benefits, some organizations may wish to engage Cisco Tetration Advanced Services expertise to gain even faster time to value through guidance on optimizing policies and application performance, and support for comprehensive adoption of the solution in their data centers. In addition, Cisco Solution Support for Tetration provides 24/7 global solution expertise for centralized issue management and resolution for Cisco Tetration Analytics and Tetration ecosystem partner products, with hardware, software and solution-wide support in a single service.