

Digitized Skill Transfer

Training vocational skills through simulators

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The Worker of the Future

- High cost of not being skilled:
 - Price of a mistake is high:
 - Cost of rework – often not quantified
 - 70 surgeries to proficiency – near-fatal
 - Employer / Customer can't pay for mistakes

Proficiency must be measurable: like a GRE score

How to Quantify Skill Proficiency?

Gresham's Law for skills: Bad certification drives out the good

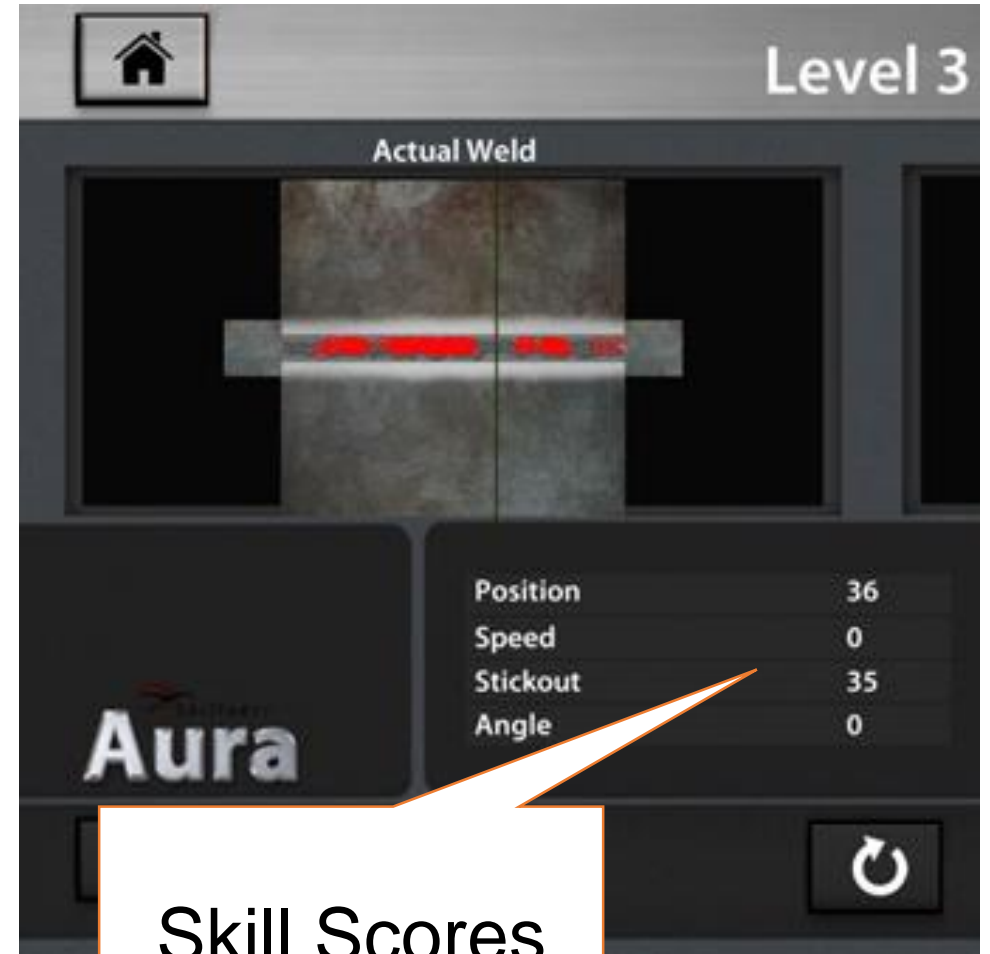
- Certified people perform poorly on the job, devaluing the certificates
- Hence, certification does not result in better pay
- NOS is a wonderful knowledge base
 - Mapped successfully what industry needs
 - Extend through measurable skills

Objective measurement – How?

1. Measurable skill elements
2. Correlate skill elements to quality outcomes
3. Providing relevant, intuitive feedback for each skill element

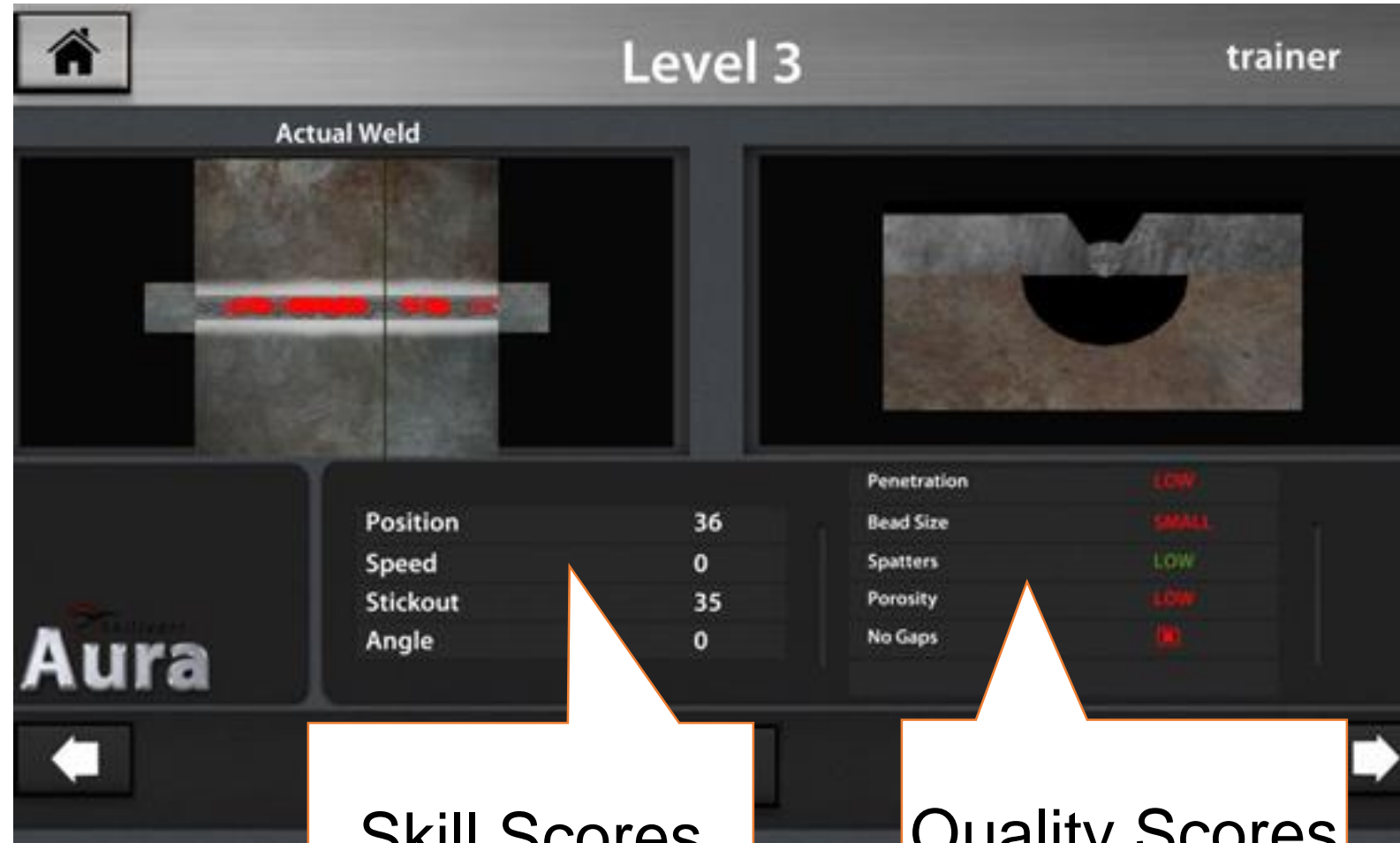
1. Measurable Skill Elements

- Position of weld
- Speed of movement
- Distance from surface (stickout)
- Angle of holding the torch



2. Correlate Skill Elements to Quality

- Penetration
- Bead Size
- Spatters
- Porosity
- Gaps



The screenshot displays the Skillveri training interface for Level 3. It features two main video windows: 'Actual Weld' on the left and a cross-sectional view of the weld on the right. Below these windows is a data panel with two columns of metrics. The left column, labeled 'Skill Scores', includes Position (36), Speed (0), Stickout (35), and Angle (0). The right column, labeled 'Quality Scores', includes Penetration (LOW), Bead Size (SMALL), Spatters (LOW), Porosity (LOW), and No Gaps (N). The interface also includes a home icon, a back arrow, and a forward arrow.

Metric	Value
Position	36
Speed	0
Stickout	35
Angle	0
Penetration	LOW
Bead Size	SMALL
Spatters	LOW
Porosity	LOW
No Gaps	(N)

Skill Scores

Quality Scores

3. Intuitive, relevant, feedback

Live



Post Weld



Welding, Spray-Painting, many more...

- Indigenous innovation supported by IIT Madras
- Well-established in welding:
 - TVS Group, Ashok Leyland, Murugappa Group
 - Labournet, Jindal Community College
- Scalable to multiple skills:
 - Measure & train skills through audio-visual-haptic tech
 - Minimal hardware & software upgrades to support newer skills



Achievements

- Winner of NSDC National Innovations for Skill Award 2014
- Selected by NSDA for Skills Innovation Initiative in Dec 2014:
 - Recommended to states to evaluate and adopt as applicable
 - Among 5 proposals selected from 129 proposals nationwide
- Indigenous technology developed for Indian needs, with support from IIT Madras
- Proven value in skill transfer, quality improvement, consumables saving

THE ECONOMIC TIMES

15th May
2014

Where are the ENTREPRENEURS?

Of the \$1.6 billion invested in Indian social enterprises, 70% is in financial inclusion. And 67% of what went into other sectors went into just 15 enterprises. Naren Karunakaran dissects this skew to see what is holding back the social entrepreneur



Sabarinath Nair SKILLVERI TRAINING SOLUTIONS

Wants to address the skills gap with a welding training simulator that simulates every aspect of welding, complete with light and sound, minus the smoke. Nair is battling mindsets when he demonstrates the simulator and aims to enhance the aspirational value of welding among rural youth

Sabarinath Nair, co-founder and CEO of Chennai-based Skillveri Training Solutions, is looking to address the severe skills gap with a welding training simulator that simulates every aspect of welding, complete with light and sound, minus the smoke. While its utility to manufacturing units and training institutes is given, Nair is now battling mindsets by taking his simulator to the rural hinterland and demonstrating it to parents and their wards. "The idea is to enhance the aspirational value of welding among unemployed youth," he says.

Sabarinath Nair, who spent time at RTBI, has drawn copiously on technology inputs for his simulator from the small clutch of pioneering professors at IIT, Madras, who understand business, starting with professor Ashok Jhunjhunwala.

THE ECONOMIC TIMES

21 Jan 2015

Never Mind Robotics, Humans Develop Automation Skills

Chennai-based Skillveri is transforming shop floors of top industrial houses by turning novices into experts in manufacturing processes

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Chennai: A machine to skill-up humans in the age of robotic automation.

That is the idea behind Chennai-based startup Skillveri Training Solutions, which is transforming shop floors of top industrial houses such as TVS, Murugappa Group and Ashok Leyland by turning novices into experts in manufacturing processes like welding.

It is a rectangular box containing a computer and fronted by a touch-screen. A sensor-embedded welding torch hovers over the touch-screen, sends inputs to the computer on the holding angle, deviation, and distance from the screen. This creates appropriate visual effects such as intermittent sparks if it's kept too far and a steady shower if done right. The system also lets out sounds based on touch-screen sensors, which also measures the speed of welding. The machine can train and assess 300 people a year and costs between ₹3

lakh and ₹14 lakh. Although it doesn't beat the real welding experience, it can cut training costs involved in welding, which will require ₹300 an hour for the steel input.

The inventors, after showing their prototypes to shop floor managers, have made the interface simpler.

"There are alternatives one can import, but the price is much higher and they are difficult to use for a non-matriculate - you need to select 20 options before putting the torch on the screen. It (Skillveri's

device) does not need any consumables, or even a trainer. It's Learn-It-Yourself," said Sabarinath C Nair, co-founder and chief executive of the two-year-old company. A 32-year-old computer science graduate with a disposition to build things than code, he had bounced off the simulator idea with Kannan Lakshminarayan, his boss at Vortex Engineering and a serial entrepreneur. With Lakshminarayan on board as founder-director and IIT-Madras professor Ashok Jhunjhunwala mentoring, Nair had begun work

on the prototype in 2012, but successive iterations had pushed the product into April 2014.

The company has done 20 installations, after testing it out at IIT-Madras with about 500 students.

"The accent on manufacturing is so apparent with the Make in India campaign that companies such as Skillveri are bound to come along," said Raman Kumar, chairman of Ador Welding Academy, a sister company of Ador Welding.

The academy bundles Skillveri's product with its training curricu-

lum to offer courses in welding, which are lapped up by corporates looking to partner for social responsibility spending. Names such as ICICI Foundation and Ambuja Cement Foundation have partnered with the Ador academy for rolling out welding training programmes for which Skillveri's simulator will do the hand-holding.

Gas metal arc welding, a widely-used metal fusion technique in automotive, shipbuilding and aviation industries, is the method of choice in Skillveri's simulator.



दैनिक भास्कर

13 Jan 2015

मद्रास से मंगाए वेल्डिंग सिम्यूलेटर

जयपुर। ऑटोमोबाइल व अन्य मैनुफैक्चरिंग उद्योगों में वेल्डर्स की बढ़ती मांग को देखते हुए राज्य सरकार ने युवाओं को प्रशिक्षण देने के लिए मद्रास से वेल्डिंग सिम्यूलेटर मशीन आयात की है। मुख्यमंत्री ने सोमवार को मशीन का अवलोकन किया। इस सिम्यूलेटर के जरिए राजस्थान कौशल एवं आजीविका विकास निगम को युवाओं को ऐसी कम्प्यूटर आधारित आधुनिक तकनीकों के माध्यम से प्रशिक्षण देने के निर्देश दिए।



THE HINDU BusinessLine

Winners of NSDC skills challenge to get ₹3-cr funding

Thank You!

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