



# **DigiEduHack Solution**

## **Porto - Individual Skills Tracking for the 21st century**

### **Challenge: Porto - Individual Skills Tracking for the 21st century Challenge 2020**

## **SaveDopamine**

### **The future of skill tracking through gamification**

Matching employees skills to organizations' projects using AI.

### **Team: SaveYourDopamine**

#### **Team members**

Luciano Zickler, Felix Reimann, Margareta Szego

#### **Members roles and background**

##### **Luciano Zickler**

Working on the projects I am passionate about! My last job was as a research assistant at a research reactor facility. I hold a bachelor's degree in Physics by the Technical University Berlin. I love new challenges and am currently embarked on the mission of becoming proficient in machine learning! I believe in achieving my goals and would love your support on this amazing journey :)

##### **Felix Reimann**

I'm 24 years old and born and raised in Berlin. Physicist-to-be, specialized on terahertz frequencies. My hobbies are programming, martial arts and playing chess.

**Supporters:** Margareta Szego (co-winner of the Porto challenge, part of the pitching team), Margarida Afonso (mentor), Antonio Machado (mentor), Alang Heinrich (video and PR), Carla Paz (proofreading), Rocío Paz (proofreading), Alex Houbar and Gustavo Hernandez.

#### **Contact details**

[linkedin.com/in/luciano-zickler-352239a9](https://www.linkedin.com/in/luciano-zickler-352239a9)

# Solution Details

## Solution description

In order to succeed in today's times, organizations have to be dynamic, driven, flexible and need to strive for constant performance optimization. This can not happen without employees aligning with the companies' goals and values. For that reason we introduce gamification into the employees' training process as a motivational tool. Our aim is to match projects driven by these values with much needed skills in the workforce.

The skill set requirements are increasingly demanding for specialized knowledge and the opportunities to gain specialized expertise are not always available. Also, due to new disruptive technology, specialized skill-sets keep evolving and extending to new domains. For these reasons some (sadly many) are left behind, despite having the potential to excel, given the proper context, opportunities and coaching.

Companies' needs and strategies are changing rapidly trying to adapt to the challenging future. As knowledge evolves, old knowledge becomes obsolete. Individuals need to adapt their skills by constantly learning and improving themselves.

SaveDopamine's tools help:

- **identify** the **skill gaps** in the organizations' skill pool
- automatically **assess employees skills** and availability with our AI system
- **estimate the difficulty of projects**
- **match** employees to tasks/projects
- **identify** workforce potential
- **optimize time management** through motivated individuals
- create an intra **company marketplace** where the demand of skills is driven by the project specifications
- **motivate** employees to **progress on a learning path** by rewarding new skills
- reward accomplished tasks/projects with **reputation points**
- **validate** the employee's **impact** based on the **prioritized goals of the company**.
- **invest** gained reputation points in **further training** and **own projects**.
- **democratize** the company's structure

## Detailed explanation

Determining skill gaps allows management to decide which skills should be the subject of additional workforce training. Capable employees who might need to update their skills in order to be an active part of the organization's growth can be identified and have the chance to get training on a learning path they are motivated to develop themselves in.

Our AI is able to track skill development, project difficulty and progress and match the employees' profile to a certain task. A reward system helps support the company's goals and give the employees incentive to further train themselves and choose a learning path sponsored by the company.

The marketplace offers a more sustainable time management as the individuals can decide on projects/tasks they'd like to work at, taking into account their own schedules. Driven employees take ownership and are motivated to deliver results.

It is this reward system together with the correct assessment of hard- and soft-skills that allows the employee to benefit from a goal oriented working culture where self-development and own ideas are encouraged. Applying the Kaizen philosophy of "constant and never-ending improvement" [1] further helps to create happy, satisfied and purpose driven employees who will support the company's steady development into excelling. At the same time, the employee's impact on the company's goals can be measured, analyzed and evaluated; guiding management and employees on the most beneficial path for the company.

Working towards a common goal as a team is key to motivating the workforce and releases dopamine. Linking personal growth to the company's development based on a shared set of values leads towards a democratized work environment.

## **Resources and glossary**

VIDEO: [SaveDopamin Marketplace Example](#)

[1] <http://EzineArticles.com/2136102>

## **Solution context**

In order to overcome the skill shortage and cope with the steady and fast-paced development of specific knowledge, companies, society and workforce need an adaptive platform. Management and employees get lost in the maelstrom of project specs and fail to take action.

We present a novel platform where these challenges are solved using AI, automatic assessment and a skill marketplace. Our AI algorithms assess the employees' skills level and match them to pertinent tasks/projects. Further, the skill pool takes into account the availability and motivation of the employees. This leads to a tool dynamically adapted to the companies' needs and goals as it empowers their employees through taking decisions and playing an active part in their own professional development.

## **Solution target group**

Our target group are dynamic companies thriving for constant growth and development, that profit from tracking their employees skills effectively. Specially knowledge intensive organizations, such as consulting firms, pharma industry and research centers can profit from SaveDopamine. Our solution provides a compact overview and decision making tool for the management level. Additionally, the employees gain a way to share their skills on an exchange platform and further develop themselves. A typical Win - Win situation.

## **Solution impact**

The happiness and work life satisfaction should dramatically improve, as employees get a say in the direction of the company and are able to develop themselves fully on their chosen path inside the company. On the one hand, this results in a substantial improvement of work and product quality. On the other hand, it also impacts positively on the company's team building and working atmosphere.

The reward system and the healthy competition on the marketplace allow for resources to be allocated to the most important projects in the fastest, most sustainable way possible. Decision

makers get a sense for the direction employees want to develop themselves in, enabling trendsetting plans for the future. They also can track the progress their skill pools are making and adapt the companies rewards and training strategies if needed. For example, a company sets the goal to achieve a 10% increase of their data science skill pool in a certain time. With our tool they can trace the growth curve and adapt their strategies to keep on track.

Due to the above mentioned employee's motivation and the proper assignment of projects/tasks which leads to a better time management, this solution is able to cut the cost/effectiveness and cost/sell ratio of employees. Cost/effectiveness can be taken as an indicator.

Employees that get left behind because their skills have become obsolete have the opportunity to relearn or learn new skills. Individuals become more qualified and can adapt to disrupting technologies and new challenges.

### **Solution tweet text**

Matching the best employee's profile to the most appropriate project? Possible! Using AI for skill assessment and reducing misplaced resources. Make better decisions with SaveDopamine.

### **Solution innovativeness**

This solution is radically different in that it includes an internal market place with a reward system, where participation is rewarded with: time on own ideas, trading of reward points for further education, gaining recognition, reputation in the organization and further benefits.

The originality of the marketplace also lays in that it allows employees to choose their own learning path. Gamification further helps motivate the participants, as they can decide on how to spend their reward points and further progress in the organization and their own learning progress.

Another innovative aspect of this solution is that it enables organizations to plan ahead their future taking into account employees sentiment. With SaveDopamine the organization can gauge the pulse of their workforce's interests and objectives, democratizing the decision taking process.

### **Solution transferability**

The primary target groups are dynamic companies and organizations that strive for excellence through their personnel development. Yet, SaveDopamine can be applied in several other areas as

- Education: for tracking the learning progress of students; students choosing a digital learning path (especially during COVID-19 times) keeping them motivated; monitoring learning evolution from both the teachers and students perspectives. Create a dialog between all that are involved within the education community, which leads to improvement of existing systems. Help schools and universities evaluate their course content and adapt it to students' needs.
- Free market: using the platform's infrastructure to match freelancers and companies to suitable projects.
- Government, public institutions and NGOs, for example the employment agency, benefit from assessing skill gaps in the population, in order to come up with solutions to the labour and education problems. SaveDopamine could be used to keep a finger on the pulse of the public's self-development goals.

## Solution sustainability

SaveDopamine can easily be implemented on specific skill pools for a certain organization. Once this proof of concept is tested, the idea can be scaled to cover all further levels of the organization (direction, management and all employees). Then it can be expanded to more companies.

In order to create a minimum viable product (MVP), there are several steps that need to be implemented. First of all, the concrete **metrics and scoring cards** for the **AI** to measure an employee's concrete **skill's level** have to be identified.

The SaveDopamine team has already identified some metrics regarding **hard skills** (e.g. data scientist proficiency) using labels for input such as **previous experience**, **keyword analysis** (e.g. identifying programming languages in CV and using a keyword database to determine skills that can be attributed to certain experiences), **community interaction** (public speaking, forum responses, specific community interactions, etc.) and **qualification** (degrees and certifications).

**Soft skills** tracking is more complex, metrics feed from a wide range of sources and it is difficult to assess their impact on an employee's soft skill. These sources can be **questionnaires** (after the completion of a project, where employees rate each other on soft skills and teamwork), project related attributes (**deadline tracking**, **difficulty**, etc) or learning **new skills**. For that reason, complex pathways have to be simplified to allow for automatic soft skill detection. We propose storing sources and their relationship to a skill, using graphs instead of relational databases (tabulary databases where relations are one dimensional). This allows pattern recognition AIs to identify correlations between sources and skill, thus correctly assessing someone's soft skills.

Secondly, metrics and scorecards for **projects** have to be defined, regarding project difficulty and importance. The difficulty can be assessed using a **SWOT analysis**, **resources allocated** and **number of participants**. SaveDopamine can help managers to establish a given project's importance by examining its alignment with companies goals and strategies.

After the project has been finished, the following metrics can be analysed by the AI: **timeline** (finished on time), **employee satisfaction**, **customer or manager satisfaction** and **resources** used up. These give feedback over the overall **quality** of the **work**, which can further be used to award the participants award points and recognitions.

Finally, the AI algorithms have to be implemented. We will use **PCA** to identify the strongest factors for determining certain skills. Then these factors can be fed to a **neural network** with a layer of neurons with a radial basis function (**RBF**) as activation function, which learns to identify employee's skill, project difficulty and importance. The RBF layers should help the AI group correlations by similarity, weighing similar inputs together, so that imbalances created by accounting for similar inputs several times are reduced.

What will our team do in the **short term**? We want to keep growing our team and supporting network to be able to present organizations with our **MVP**. A business plan will also be called into life to guide our strategic planning ahead.

Where do you see yourself in the **midterm**? Creating an MVP and securing **funding** or strategic **partnerships** with potential customers, VCs and public organizations. In the **long term** we aim to be **represented in the market** and grow as a company.

If we win the DigiEduHack 2020 global prize, we will reinvest in specialist knowledge and team resources in order to develop an MVP and incorporate our idea as a start-up.

## **Solution team work**

As a team we have come up with an elaborate solution, including context, solution applicability and implementation details, all of this whilst working under a tight timeline.

We remained highly motivated, thinking out creative ideas to tackle problems, learning by doing and managing the project, distributing the necessary tasks among the team members.

As a multifaceted team with strengths on AI, project management, networking and communication we complement each other in the best way. We constantly reach out for support and grow our team to solve upcoming challenges. SaveDopamine already has a convinced team of supporters and mentors that will help us reach success. For that reason, moving forward our objective is to keep growing the idea and implement it on the market.

We have shown that as a team we are capable of efficiently working together carrying out a project of this magnitude. We worked collaboratively, in iterations, incrementally adding value and refining our solution. This highly collaborative approach with continuous incremental improvements can naturally evolve to an agile methodology when we move to the solution design & implementation phase.

Help us on our quest to revolutionize the future of how organizations succeed in their business while leveraging and enhancing all participants' personal developments. Let's democratize how our society treats work & career development! Together we'll bring SaveDopamine to life!