Entreprneurs in Consumer Electronics

By Tom Wilson

Enabling your grandmother to scan her electricity meter with a smartphone requires handling many more degrees of freedom.

Wilson: How did this turn into Anyline?

Kiningadner: A friend of mine was a co-founder at a start up called mySugr, which had developed an app to help diabetics monitor and manage their sugar levels. He explained that users found it very tedious to manually type in the blood sugar reading from a standalone measurement device into their mySugr app, and we discussed using OCR on the smartphone to enable a user to scan in the sugar-level reading directly to the mySugr app. We were excited about the potential to improve people’s lives, but it turned out to be a much more difficult technical problem than it sounded. We initially estimated a month’s work, and eventually it took nine months! However, having realized that we had solved a difficult problem, namely, OCR on mobile, we realized that there would be many more companies whose apps could benefit from OCR as a part of their product, for whom it would be more economical to license it in our technology than to develop this themselves. Thus, we had the foundations for a business and, in 2013, after gaining high-profile clients, such as Red Bull, and winning Innovation awards, we had the confidence to focus on this alone.

Wilson: What was the problem, and why was this so difficult?

Kiningadner: It turns out that performing OCR on a smartphone is difficult, for several reasons. OCR may have been solved in the 1980s for scanning machines, where high-quality cameras and lenses are a fixed distance from the text within a controlled lighting environment, but enabling your grandmother to scan her electricity meter with a smartphone requires handling many more degrees of freedom. A mobile environment has so many variables, starting with the ambient lighting conditions, the distance of the camera from the target text, its size and font, the experience level of the user, the low quality of the camera and lens, and, not least, the heterogeneity of the cameras. On the Android platform, there are over 28,000 different camera configurations, each with its own colors and distortions that affect the image as seen by the OCR.

Wilson: What is so special about Anyline’s solution?

Kiningadner: Our solution makes it easy for developers to integrate fast, accurate, and reliable OCR into their products, because it is designed to deal with these camera variables and guide the user through the process of capturing an image. It can warn the user, e.g., that the image is too dark or that he or she needs to move the phone to avoid a reflection obscuring the text. These features are only possible because our
software runs very efficiently on the device, enabling it to observe the video stream at 100 frames/s, which is fast enough to give real-time feedback to the user. Exploiting this video stream also helps achieve a high recognition accuracy, as combining several images gives a more confident and accurate result than using any one of the frames individually. Last year, we upgraded our OCR technique to a convolutional neural network-based approach, which runs 30% faster and improved accuracy by 40%.

Wilson: Why did you decide to go the SDK route and not make a consumer-facing product?

Kinigadner: This was a tough decision. When we started winning awards and gaining a lot of publicity, everyone around us wanted to hear a big story and started extrapolating all the things we could do. In hindsight, it was a blessing that, with limited resources, we had to ask the question, are we going to be the best OCR tech company for mobile devices, or do we want to be the best utility meter-reading app?

But it wasn’t plain sailing, and we learned the hard way that you must show use cases that illustrate how something can be useful for your potential customers. You can’t expect them to do the hard work of imagining the potential of your generic solution. Sales were easier when we simplified our messaging to: “We are the market leader in mobile OCR tech for utility meter reading, license plate identification, and passport scanning.”

Wilson: What was the hardest experience you’ve had so far?

Kinigadner: After two years of startup developer culture, our revenues were not growing in line with our expenses, and I was forced to reorient the company into a sales-driven organization. This included introducing procedures and formal job descriptions and giving the sales team more influence on the 12-month product road map, which is now the axis around which everything is organized. No one had left the company during the first two years, and suddenly my colleagues—friends—were resigning emotionally, so this was very tough for everyone, including me personally. But it was absolutely necessary for the survival of the company, and since then our revenue has grown every quarter.

Wilson: What does the company look like now?

Kinigadner: We are a team of 30 based in Vienna, [Austria], with seven-digit revenue, and we serve 100 enterprise customers in more than 50 countries. It may come as a surprise to some engineers when I say that we have as many staff working on sales and marketing as we do on software development.

Wilson: What advice would you give to engineers considering becoming entrepreneurs?

Kinigadner: I would encourage them to follow their dreams. In my experience, engineers tend to underestimate themselves from a business perspective, but their logical approach can actually make them great founders. Business degrees and investors often encourage entrepreneurs to chase the biggest market opportunities to get rich quick. In contrast, engineers love solving challenging problems, and doing so often makes a more useful contribution to the world.

ABOUT THE AUTHOR

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Notes from the Editor (continued from page 3)

which will be enjoyable reading for the CE community.

COLUMNS

BITS VERSUS ELECTRONS
The article “From Broadband to Infrastructure” presents an evaluation of the Internet.

THE ART OF STORAGE
Selected digital storage devices presented at the 2018 Consumer Electronics Show are presented.

ENERGY AND SECURITY
In “Supercapacitors Outperform Conventional Batteries,” a supercapacitor-based power converter is presented for CE systems that is better than conventional battery-based energy sources. I envision that supercapacitor and chemical hybrid energy storage can be effective for new CE systems, including smart cars.

PROFESSIONAL DEVELOPMENT
Entrepreneur Lukas Kinigadner engages in a discussion in “Entrepreneurs in Consumer Electronics.”

LOOKING FORWARD
I hope this issue dedicated to the smart car is useful for a wider set of CE communities to advance their knowledge on smart products. With the help of the editorial board and authors around the globe, I would like to see these themes covered further as well as other emerging hot topics in future issues of IEEE Consumer Electronics Magazine.