

## Historical Female Influencers in Automatic Control – the importance of role-models for underrepresented groups

Charlotta Johnsson\*, Eva Westin\*, Margret Bauer\*,\*\*

\*Department of Automatic Control, Lund University, Sweden ([charlotta.johnsson@control.lth.se](mailto:charlotta.johnsson@control.lth.se))

\*\*University of Applied Sciences Hamburg, Germany

### EXTENDED ABSTRACT

Automatic control systems are today pervasive. They appear practically everywhere in our homes, in industry, in communication systems, in all type of vehicles, and in scientific instruments. Despite this, automatic control is not very much talked about, which is why it is often referred to as the hidden technology. Fundamental principles of control systems are sensors, actuators, mathematical models, systems and feedback.

To make the general public aware of the societal importance of automatic control, it is important to highlight areas where it plays a crucial role. To further inspire school or university students to study and engage in the academic discipline of automatic control, role-models are important. A role model is a person who serves as an example by influencing others, and inspiring others to imitate his or her behavior. When we are young and grow up, the role model is usually an elder person from the family or close relations, someone who we admire and get inspiration from. As we grow older, and start to shape our working-life, it becomes important to have professional role models, someone that we can identify with and who can demonstrate, in a good way, what we can achieve and how our working life can be. These role-models pushes us to make the most out of our working life.

It is interesting to look at the presence of role models in the automatic control community. The elder professionals in this field influence the younger, and thereby shape the younger generation. There are many occasions where younger, potential future control professionals, could be influenced by more experienced persons in the field. However, by letting the elder generation inspire the younger generation without reflecting on issues such as stereotypes and conformity(??) there is a risk that underrepresented groups feel excluded from the community. Hence, it is important that role-models represent not only the passed but also the future, in order to build an inclusive community.

Inclusion and equality can be looked at from many perspectives, one is gender. Since the field, to a very high degree, has been populated by males, it is understandable that the majority of the elder professionals that are highlighted are men. Therefore, it is important to highlight females as well, as a way to welcome and inspire a broader workforce to this field.

We have gathered a collection of portraits of women who worked in control engineering over the decades and left their mark. The purpose has been to document their role and importance in the field of automatic control and to highlight the role of women for today's students. More specifically we have searched for females, born prior to 1960 and hence no longer in active duty, that made significant contributions to the field of automatic control. Out of the seventeen that we have found, we have made portraits of eight of them. Each portrait consists of a picture (see figure1), a short bio, and a set of three slides summarizing the main contributions.

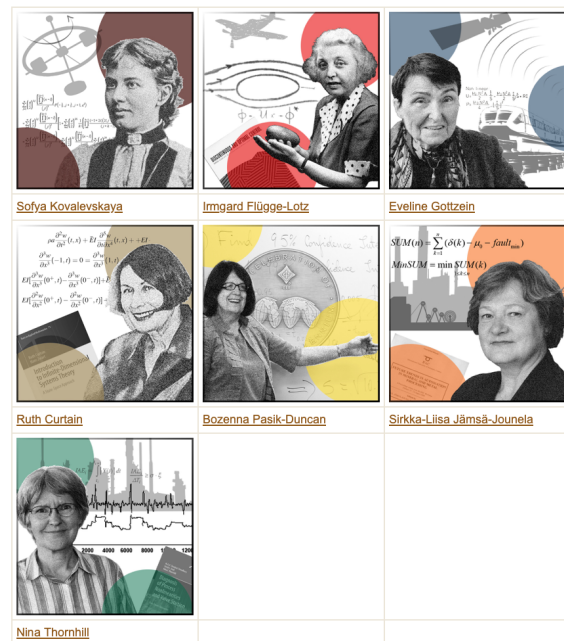


Figure 1: Seven female pioneers in Automatic Control.

The portraits are made open-source, and hence we allow other teachers and universities to use them at lectures etc. In this way we hope to inspire future females to study automatic control and make them understand that the field is also suitable for them.



Figure 2: Link to the portraits

The importance of having role-models applies to these under-represented groups, not only to females. This could e.g. be gender, ethnicity, social belonging, and religious affiliation. Also for these groups portraits could fill an important role. The aim is to make automatic control a more inclusive field of study and profession. This is very important for a successful future for the field.

#### ACKNOWLEDGEMENT

The authors would like to acknowledge the financial support of the IFAC Activity Fund, ELLIIT Excellence Center at Linköping – Lund in Information Technology and Lund University, Faculty of Engineering.