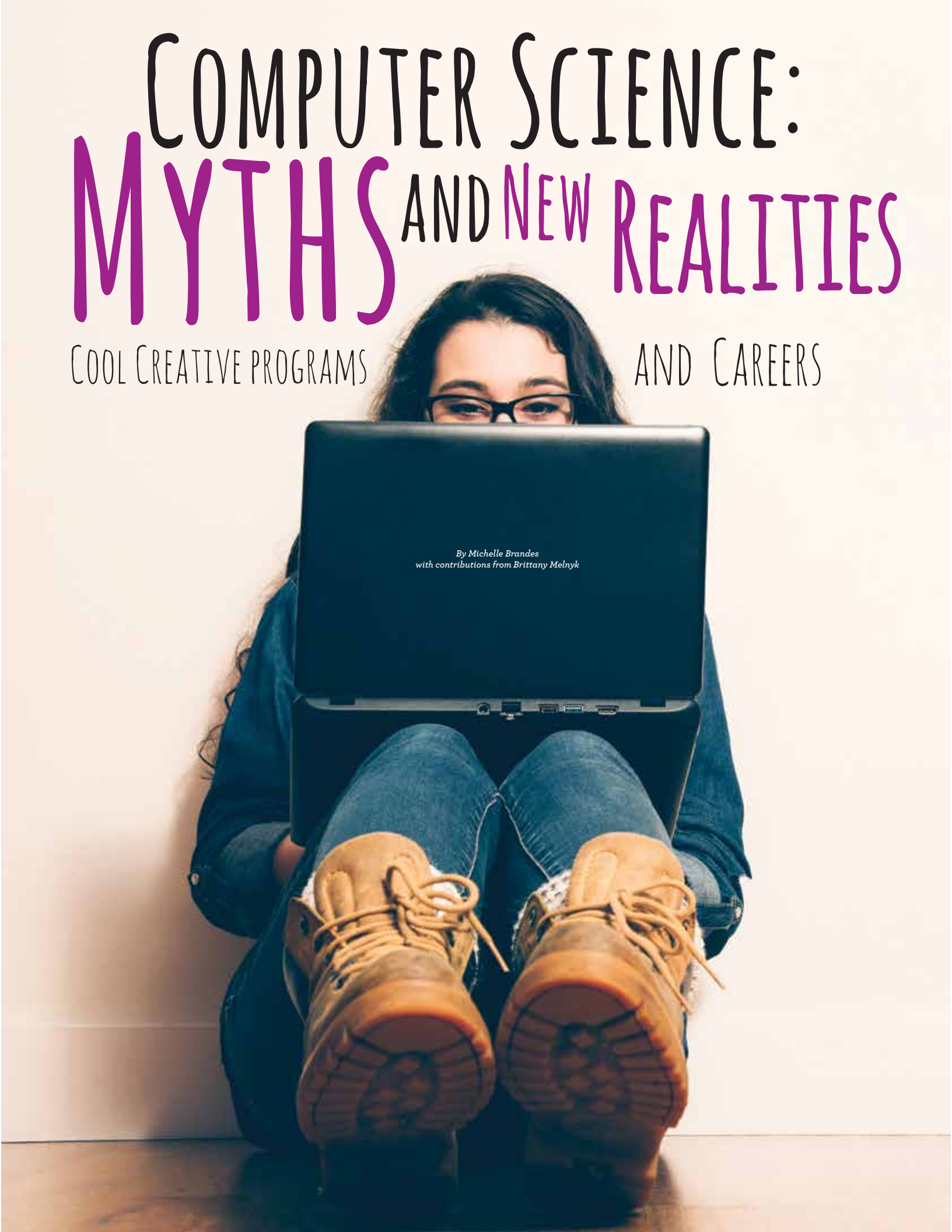
Computer Science: Myths and New Realities

Cool Creative programs and Careers



By Michelle Brandes
with contributions from Brittany Melnyk

What's the first image that pops into your mind when you hear "computer programmer"? Do you think of a guy—maybe a socially awkward math nerd sitting alone in a dark room in front of a computer screen? That's the stereotype and unfortunately, it's so pervasive that a Google search on the subject will yield images of just that.

Exciting, creative and significant careers can come from a background in programming and computer science.

The reality though is that not only will knowledge of computers and programming become increasingly necessary for the jobs of the future but there are incredibly exciting, collaborative, creative and socially significant careers that emerge from a background in programming and computer science.

Yes—it's true, programming has traditionally been seen as a "boy's club" and much has been written about the shortage of women in the STEM fields (Science, Technology, Engineering & Math) but the time has come to debunk the myths around computer science, the skills required to get into the field and the careers that exist for graduates. As you'll see below, computer science represents a wealth of opportunity for young women and men.

Our false images of computer programmers have also partially been fed by a shortage of visible female role models in the field. From that same Google search mentioned above, one of the few images of a woman in the field is that of Ada Lovelace, the first computer programmer way back in the 1800's. Women have been an integral part of the computer science world since the beginning, but for a variety of reasons, those images have not entered our collective consciousness.

Fortunately, we now have a plethora of inspiring women in the field who are actively encouraging young women to enter computer science programs. Meet Brittany Melnyk, one such role model. In high school, Brittany was into the arts and athletics and never set out to pursue a career in computer science. She is now the Academic Programs & Outreach Coordinator for the Department of Computer Science at the University of Saskatchewan (U of S.) Brittany received her B.Sc. in Computer Science from U of S and is currently pursuing an MBA. Brittany has a passion for encouraging women and girls to explore Computer Science and as a subject matter expert, she has much to say about all of those unfortunate myths that pervade the computer science field.

Myth #1

You need to be a math genius to succeed in Computer Science.

Get all of those "1's" and "0's" out of your mind, because computer science isn't all about number crunching. While you do need some math skills (in many cases the admission requirement is one basic grade 12 math credit), the path you choose in computer science will dictate how much math you need to learn. According to Brittany, the math skills necessary to succeed in computer science are things like good analytical skills, logic, deductive reasoning and attention to detail. Coding, like math, is a skill that improves with practice, so don't let math scare you away from pursuing a career in computer science!

Myth #2

Computer science isn't creative.

Actually, the world of computer science is a very creative discipline where programmers are using their imagination (and their technical skills) to create new products, like virtual reality suits, design the latest cool games (think Pokemon, Candy Crush or Subway Surfer) or use technology and coding as a means of artistic expression in the film and television world or visual arts.

Myth #3

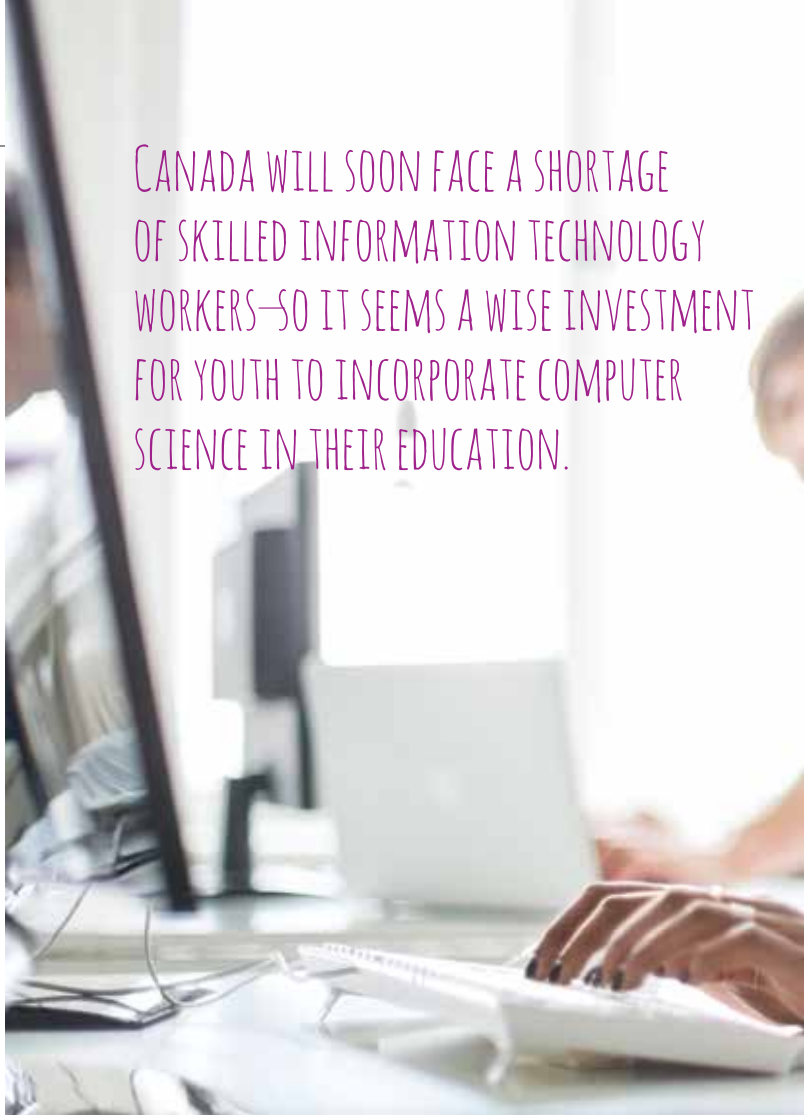
Computer science isn't a "helping profession."

Our world is becoming increasingly technical as we interact with computer systems in everything that we do—from using our smartphones to paying for our groceries. Innovative life saving technologies come from leveraging those computer systems to make a difference in the world. There are many innovative research and development projects on the go at the University of Saskatchewan. Projects include using computer assisted analysis to determine which genes are being affected by cancer drugs and digitizing desired crop traits to create healthier and more stable crops.

Myth #4

Computer science is antisocial.

Now, back to that image of the programmer working alone in his basement—let's completely throw that idea out the window. Computer science is very collaborative and is all about finding solutions to human dilemmas like how to prevent the spread of infectious diseases or how to stream the best music. The solutions are derived from pulling together teams from different skills sets and disciplines to work together to reach conclusions.



Canada will soon face a shortage of skilled information technology workers—so it seems a wise investment for youth to incorporate computer science in their education.

As we look at the world around us, it is clear that computer science is not going away—it is only becoming increasingly integral to our lives and our work. Schools all across North America, from elementary to high school, are recognizing this and are working to integrate computer science education into the regular curriculum. Organizations like "An Hour of Code" are introducing students to coding under the mantra of, "every student in every school should have the opportunity to learn computer science."

Students today are growing up surrounded by technology—from their smartphones, social media, wearables and computer games—it's just a part of their lives. But digital literacy means more than just knowing how to use your phone. As President Obama said, "don't just play on your phone, program it." To truly rise above the competition in the job market, students need to have some technical know-how. According to a recent *Maclean's* magazine article, students should be encouraged to, "add tech to a humanities degree to bridge the employment gap." According to the article, a 2012-2013 study in the US revealed that when a liberal arts grad added a technical skill like computer programming, graphic design or social media to their education, the number of jobs available to them doubled and their salary increased.

But for all of the focus on computer science, arts students need not despair! A liberal arts education teaches marketable skills like writing, problem solving, teamwork, holistic thinking and even psychology. These

are skills that tech companies like Google and Shopify are looking for in their new hires. Believe it or not, but according to that same US study, the most sought after skill that companies are looking for in their new software development hires is actually writing. While there has been much focus on the need for arts students to gain technical skills, a lesser known movement perhaps, is the *STEM* to *STEAM* movement, which calls for the addition of "*Arts & Design*" to the traditional STEM field (Science, Technology, Engineering & Math.) STEM + Art = STEAM.

It seems then that to be truly well rounded and ready to face the job market, the marriage of the arts and some science (or vice versa) opens up a wealth of opportunity. Luckily, many post secondary institutions are making it easier to combine CS and the Arts by combining disciplines within degrees or by shifting away from the traditional university experience of requiring students to declare a major/minor and then restricting course selection. Many institutions are allowing for more fluidity and movement between departments allowing students to have a more multi-disciplinary university experience. It has become easier than ever to try a computer science elective and see what possibilities it opens up.

But—what if you're not ready to commit to a whole university level course? If you just want to dip your toes into the CS world, why not start with a workshop? In just an afternoon you can meet some passionate and motivating programmers, learn a cool new coding language and see what the CS world has to offer. **Ladies Learning Code** (ladieslearningcode.com) is one organization with workshops all across the country to introduce women and youth to coding, **Hatch Canada** (hatchcanada.com), which is geared more for the younger set, offers $5 coding Friday workshops or check out your local public library for a coding workshop.

As an advocate and strong believer in the value of a computer science education, Brittany Melnyk views CS as a basic tool, just as basic as the need to read and write! She encourages post secondary students to at least try one computer science class and consider the possibility of doing a minor in CS—it can be combined so naturally with any other discipline from health sciences to humanities, business, art or psychology.

We've all heard about the shortage of skilled IT workers that Canada will be facing in the near future. Knowing that, it seems to be a wise investment for the youth of today to consider incorporating computer science into their post secondary education. With such a wide variety of exciting, creative, socially responsible and collaborative careers available—there just may be something to appeal to even the most hard core technophobes! **CO**

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