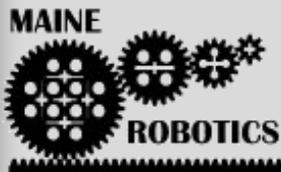




Spring 2017

### Upcoming events:

- Robot Track Meets
  - Oakland May 6th
  - South Portland May 13th
  - Ellsworth May 20th
- FIRST LEGO League
  - Registration starts May 1st
- Maine Robotics Summer Camps
  - Registration now open
  - For more information visit [camps.mainerobotics.org](http://camps.mainerobotics.org)



### Inside this issue:

- Dinosaur Print **2**
- Evolution of the Segway **2**

Please share with your class and friends!

Thoughts for the Spring

### Taking a New Leap In Sneaker Engineering

In response to the new push to break the 2 hour marathon record, the engineers at Nike came up with an innovative solution that could help super athletes get that extra push that they need.

The Nike Zoom Vaporfly Elite challenges the running shoes of the past, which have been as minimal as possible to make sure that the weight of the shoes doesn't tire the athlete's legs as they run.<sup>1</sup> These shoes use conventional materials seen in racing shoes before but in totally reimagined ways.

These shoes have a relatively high profile, provided by the midsole cushioning. This cushioning protects the runner's feet from a large

amount of the force induced by pounding the pavement. It also serves to trap and rebound some of the energy put in by the runner to lessen the fatigue in their legs and feet.<sup>2</sup>

The shoe also includes a carbon fiber plate that adds stiffness and is shaped to follow the curves of the runner's foot to give just enough support to decrease the strain on the runner's toes without transferring it to their calves.<sup>1</sup>

Nike is only making three customized pairs so far. Nike's athletes in this Breaking2 initiative are Eliud Kipchoge, Lelia Desisa, and Zersenay Tadese, three of the fastest runners in the world. (Cont. page 3)



Nike Zoom Vaporfly Elites<sup>1</sup>

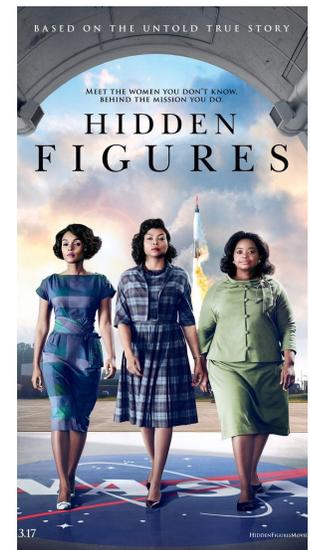
### Movie Review: Hidden Figures

One of the top movies this winter, *Hidden Figures* tells a story of NASA that hasn't been heard before.

This historical drama is about three particular African-American women mathematicians of NASA, Katherine Johnson, Dorothy Vaughan, and Mary Jackson, working on the John Glenn space launch. Not only did these women help to create a voice for women in STEM, but also

challenged the racial barrier.<sup>4</sup>

This movie was inspired by the book *Hidden Figures: The American Dream and the Untold Story of the Black Women Mathematicians Who Helped Win the Space Race*, written by Margot Lee Shetterly. It was released shortly before the movie was released, and became a #1 New York Times bestseller.<sup>5</sup> (Cont. page 2)



Images:

1. Nike: <http://news.nike.com/news/nike-zoom-vaporfly-elite>
2. IMDb: <http://www.imdb.com/title/tt4846340/>
3. Hidden Figures: <http://cdn-img.essence.com/sites/default/files/1485799456/oghiddfigures.jpg>
4. History: Damian Kelly/University of Queensland/EPA
5. Segway: [http://www.segway.com/media/1214/02\\_tours\\_segway.png](http://www.segway.com/media/1214/02_tours_segway.png)
6. Ninebot: Google Images
7. Marathon: Google Images

**“Segway”  
come from the  
word Segue  
meaning  
smooth  
transition**



**Maine Robotics**

**Movie Review: Hidden Figures, Cont.**

The movie takes the audience back to the times when the computers of NASA were women, working behind the scenes to ensure that the mathematics for monumental space missions were correctly calculated.

The movie shined light on one division in particular, the West Computers. Some of these inspiring women climbed the ranks against all odds to join their rightful places alongside some of the smartest brains of the time. This division was created in

the 1940s after President Roosevelt’s Executive Order to prevent racial discrimination in government and war-related work. The rest is history, with thousands of women computers working diligently to win the space race through the years.<sup>6</sup>

Hidden Figures went on to be nominated for three Oscars, two Golden

Globes, along with numerous other awards. It is a very inspirational, feel-good family movie that gives the African-American women computers the credit they deserve.



**Discovery: The World’s Largest Dinosaur Footprint**

Recently there has been a new discovery of the Jurassic sort. A 1.7-meter foot print. This print was probably left by gigantic herbivore, estimated to have a height of 5.3 to 5.5 meters at the hip.<sup>11</sup>

This print was found in Western Australia along with a collection of other enormous prints pressed into the sandstone rock. They are thought to belong to 21 different

types of dinosaurs, making the site home to one of the richest locations of diverse prints.<sup>12</sup>



Some of the tracks belonged to armored dinosaurs, including Stegosaurus. Others belonged to two-legged herbivores, and the largest belonged to sauropods, huge herbivores with long necks and tails.<sup>11</sup>

This discovery is a huge breakthrough for paleontology in Australia.

**The Evolution of the Segway**

Some people may not be aware that one of the founders of F.I.R.S.T., Dean Kamen, is not only to thank for middle school and high school robotics programs now around the world, but also for the invention of the Segway.

A Segway is a two-wheeled, self-balancing, battery-powered electric vehicle produced by Segway Inc. based in New Hampshire and established in 1999.

The name, Segway comes from the word, segue, which means smooth transition, which the Segway provides.<sup>7</sup>

The user leans their body gently forward or backwards to make the Segway move. The more the user leans, the more the tilt sensors change the speed of the wheels, meaning that the rider is always balanced.<sup>8</sup>

(Cont.)

### The Evolution of the Segway, Cont.

When the Segway was unveiled on “Good Morning America,” people were amazed by this new piece of technology. There were high hopes for how it could revolutionize urban transportation.<sup>9</sup>

But after its release in 2002, reality set in. It is hard to change an urban system without changing the urban landscape first. As Segway users began to realize, there was no Segway lane. The question arose of whether the Segway should be treated as a bicycle or if it should be driven on sidewalks and go along with pedestrian flow.

The next problem came with finding parking for these vehicles, which became very difficult, because they were very hard to get up stairs.<sup>10</sup>

After it was made clear that the general public was not yet ready for this revolutionary piece of technology, there surfaced another use for it, urban law enforcement and security professionals.

Segway came out with the Patroller model Segway in 2009 to create a form of transportation that lessened the strain of walking and patrolling all day.<sup>9</sup> Other uses of the product that have come about is for professionals in charge of large facilities and for tourism.

In 2016, Segway came out with the Ninebot One S2, which takes the Segway to the next level. This technology is a one-wheel, hands-free personal transporter that is meant for those that

want a challenge.<sup>9</sup> In the future, these small recreational machines maybe be seen on the streets and in skate parks due to the appeal it has to the younger generation.

Even though the Segway may not have made the instantaneous revolution that Dean Kamen ordinarily envisioned, it has made people think about the future of low emissions transportation and how it will fit into society.



Ninebot One S2

**The United States needs more engineers and programmers. And that starts in the elementary school, not in college.**

### Taking a New Leap In Sneaker Engineering, Cont.

As Matthew Nurse, VP of the Nike Sports Research Lab stated, “We’re at a point where we now feel that we have the science,” along with the athletes that with modern day training, have a good shot at reaching the sub 2 marathon goal.<sup>3</sup> There are other companies joining the competition including Adidas

with their Adizero Sub2. Everyone wants a shot to say the shoe that they created was the extra push that humanity needed to shatter a record that has been seen as one of the big barriers of human potential.<sup>3</sup>

Shoes are not something that people think of first when they hear the word

engineering, but the world of performance sports and the demand for faster and better has engineers working with

professionals in biomechanics and sports to create a genuine piece of engineering innovation.

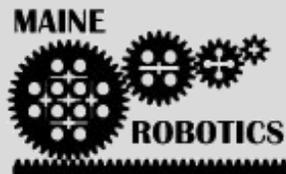


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### What can you build?



Maine Robotics seeks to promote growth and interest in the sciences of engineering and computers; to provide opportunities to instruct teachers, coaches, and mentors in the skills necessary to in turn mentor and teach the youth of Maine. We also seek to provide a supportive system for children and youth to learn more about the STEM-C fields in an energetic and educational manner.

Maine Robotics offers the FIRST LEGO League Program, the Robot Track Meets, Workshops, and the ever growing Summer Academic Camp program. Each year we work with over 2000 children, youth, and adults.

We're on the web:

[www.mainerobotics.org](http://www.mainerobotics.org)

### Taking a New Leap In Sneaker Engineering

- 1 <http://news.nike.com/news/nike-zoom-vaporfly-elite>
- 2 <http://www.businessinsider.com/nike-created-shoe-for-running-two-hour-marathon-2017-3>
- 3 <https://www.wired.com/2017/03/nike-zoom-vaporfly-elite/>

### Movie Review: Hidden Figures

- 4 <http://www.foxmovies.com/movies/hidden-figures>
- 5 <https://www.harpercollins.com/9780062363596/hidden-figures>
- 6 <http://www.smithsonianmag.com/history/forgotten-black-women-mathematicians-who-helped-win-wars-and-send-astronauts-space-180960393/>

### The Evolution of the Segway

- 7 [https://en.wikipedia.org/wiki/Segway\\_PT](https://en.wikipedia.org/wiki/Segway_PT)
- 8 <http://science.howstuffworks.com/transport/engines-equipment/ginger.htm>
- 9 <http://www.segway.com/about/our-story>
- 10 <https://www.wired.com/2015/01/well-didnt-work-segway-technological-marvel-bad-doesnt-make-sense/>

### Discovery: The World's Largest Dinosaur Footprint

- 11 <https://www.theguardian.com/science/2017/mar/28/worlds-largest-dinosaur-footprints-discovered-in-western-australia>
- 12 <http://www.history.com/news/australian-jurassic-park-home-to-worlds-largest-dinosaur-footprints>

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