1. **Heavy hitters identification using Open vSwitch (OVS) and Storm.** Open vSwitch is the leading open source implementation of the Open Flow standard for Software Defined Networks (SDN). Heavy hitters identification is an important capability for various networking functionalities such as load balancing, quality of service enforcement, and distributed denial of service (DDoS) attacks identification. In this project you will implement a hierarchical heavy hitters (HHH) identification algorithm recently developed in our department. The goal is to export data routed by OVS to a storm cluster whose bolts implement an HHH algorithm and try to optimize this configuration for best performance. Suitable for 2-3 students.

2. **TinyTable in C/C++.** TinyTable is a compact hash table that can be used to efficiently maintain networking flow statistics. It is documented in the following report: [http://www.cs.technion.ac.il/users/wwwb/cgi-bin/tr-info.cgi/2015/CS/CS-2015-04](http://www.cs.technion.ac.il/users/wwwb/cgi-bin/tr-info.cgi/2015/CS/CS-2015-04). Its functionality is very important for networking devices, but can also be used as a general purpose highly space efficient hash table. We currently have a Java implementation. In this project, you are to implement TinyTable in C/C++. The implementation should be as efficient as possible. Suitable for 1-2 students.

3. **TinySet in C/C++.** TinySet is an access efficient Bloom filter construction. It offers better performance and memory locality than standard Bloom filters, which are used in networking devices, distributed storage systems, pub/sub, Internet browsers, and many other applications. TinySet is documented in the following: [http://www.cs.technion.ac.il/users/wwwb/cgi-bin/tr-info.cgi/2015/CS/CS-2015-03](http://www.cs.technion.ac.il/users/wwwb/cgi-bin/tr-info.cgi/2015/CS/CS-2015-03). We currently have a Java implementation. In this project, you are to implement TinyTable in C/C++. The implementation should be as efficient as possible. Suitable for 1-2 students.
4. **Food Helper.** You are in the supermarket and suddenly see that zucchinis are on sale. But, you don’t know what to do with them. Or, you open your fridge and all that is left is cabbage - can you turn this into a nice dinner? Simply snap it with your phone and wait for your friends to send you potential recipes. An important aspect of this project is on having an intuitive and nice UI. Ideally, it should integrate well with an existing social network platform. Additions can be, for example, ranking your friends suggestions and seeing how their friends have ranked them in the past to help you choose the most promising recipe. Also, think of how the list of ingredients should be best handled. Suitable for 2 students.

5. **Augmented Reality Mobile Game.** In this project you need to develop an augmented reality game played with a mobile phone. Ideally, is should involve the phone’s camera, GPS, and Internet connectivity. Social interaction is a major plus. Be creative! Suitable for 2-3 students.

6. **Networking stream processing.** In this project you will need to implement a recently developed network stream processing algorithm in C/C++ and perform timing measurements. The implementation should be as efficient as possible. Suitable for 1 student.

הнтיט אלים
בכל הפרוייקטים, בצווי הוספיים ילקחו הביטויים הבאים:

- (10%) מסמך ביינימ: high-level design
- (15%) מסמך יישום: functional specification
- (10%) מסמך משתמש: user manual
- (55%) בועזים של הפרוייקט
- 55% איכות "מוצר" של הפרוייקט

במהלך הסמסטר תהיימו 2 פגישות מעקב (שבוע 2, שבוע 5), גרסה אלפיה (שבוע 12) והגשה

**Συμφ.** יש להגיש את מסמך ה-high-level design. כדי להגיש את המסמך בני של מסמך

**Συμφ.** יש להגיש את מסמך ה-functional specification.