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SIT225: Data Capture Technologies

Activity 4.1: Collect GPS data using mobile apps

Mobile phones have significant sensing capabilities such as GPS, acceleration and lux. In this task you will use existing free mobile apps to record some GPS data.

Hardware Required

A smartphone with GPS.

Software Required

A web browser

Either Android Geo Tracker

(https://play.google.com/store/apps/detailsid=com.ilyabogdanovich.geotracker&hl=en)

Or iOS myTracks (https://itunes.apple.com/au/app/mytracks-the-gps-

logger/id358697908?mt=8)

You may install and try out any other app well as, as long as they can track GPS & export tracks to GPX format.

Steps:

| Step	Action
1	Track a journey using one of the installed mobile apps. It is best if your tracked journey spans at least 5 kilometers. Export your track to GPX format and save the file to your computer. Alternatively, you can email the .gpx file from your phone and download it to your computer Question: Upload your .gpx file to a cloud storage (such as OneDrive) and share a public link here.

	Answer: https://drive.google.com/file/d/1NsvLr9-yMteBJDSZL433FuywHvjHQdx6/view?usp=sharing
2	Question: Open a browser on your computer and go to http://utrack.crempa.net/ . Upload your .GPX file to the site and click 'Generate Report'. Take a screenshot and include it here. Answer:

Elevation

Elevation profile

Elevation profile
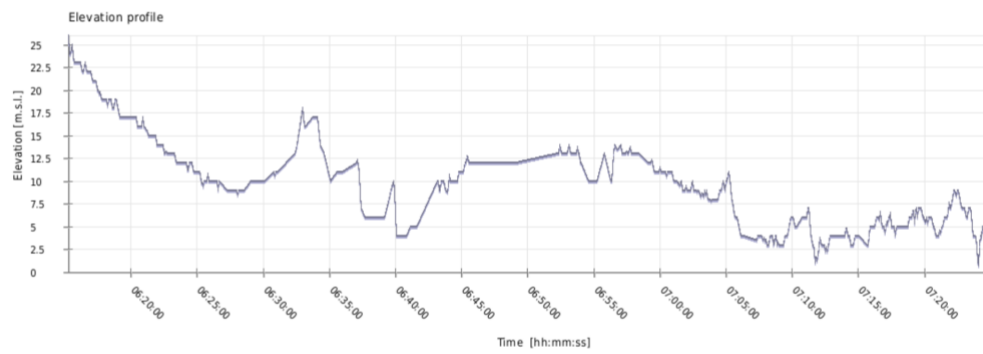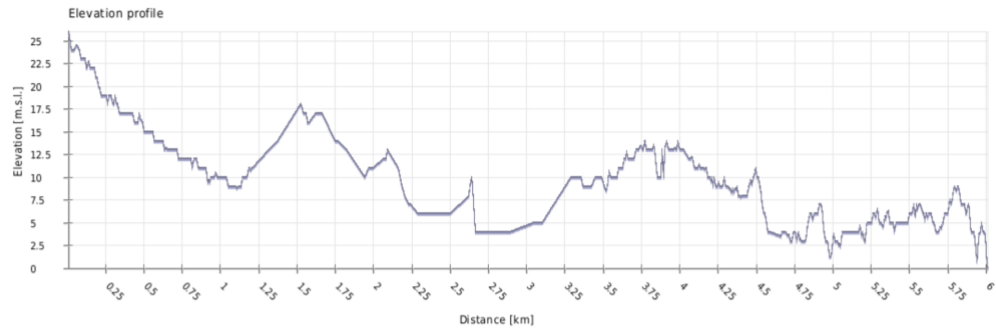
Minimum elevation:	0 m.s.l.
Maximum elevation:	26 m.s.l.
Average elevation:	9.6 m.s.l.
Maximum difference:	26 m
Total climbing:	140 m
Total descent:	163 m
Start elevation:	23.4 m.s.l.
End elevation:	0 m.s.l.
Final balance:	-23.4 m

Speed

Speed profile

Speed profile
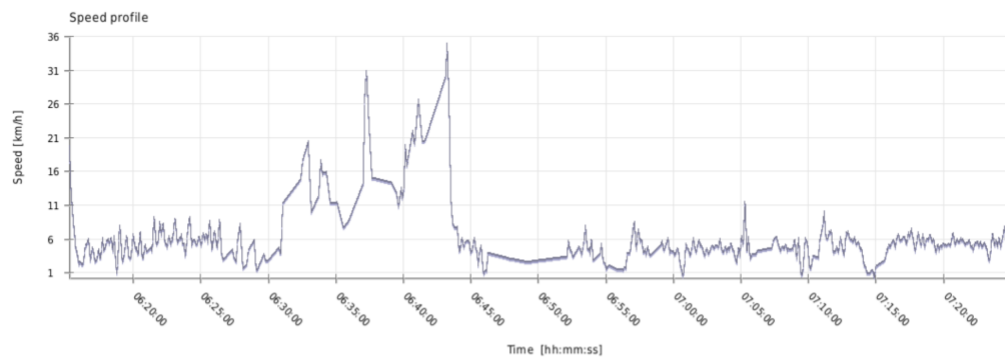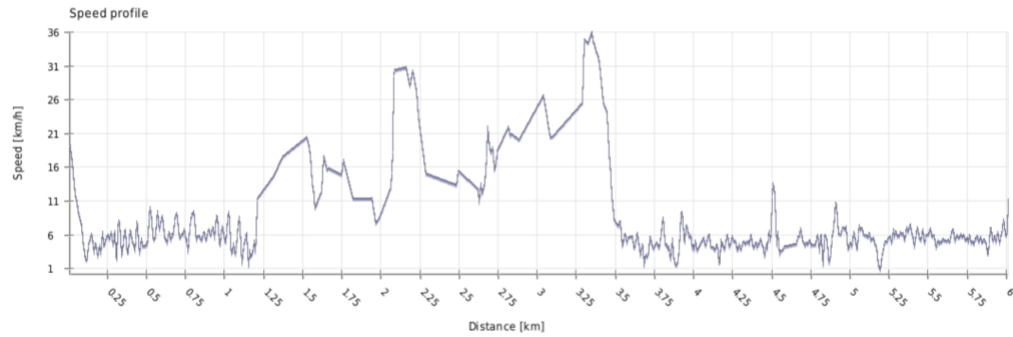
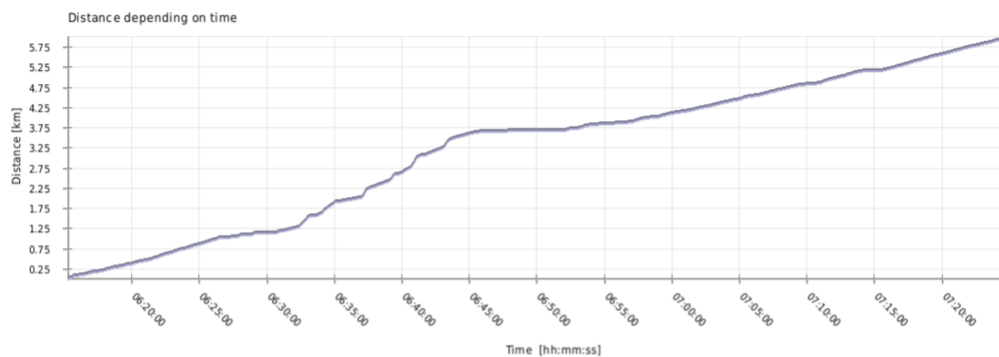| Minimum speed:	0.2 km/h
Maximum speed:	36 km/h
Average climbing speed :	8.7 km/h
Average descent speed :	10.9 km/h
Average flat speed:	6.5 km/h
Average speed:	7.3 km/h

Time

Date of track:	19.8.2025
Start time:	06:15:16
End time:	07:24:48
Total track time:	1h 09m 32s
Climbing time:	14m 14s
Descent time:	08m 15s
Flat time:	47m 03s

Distance

Distance depending on time

Total flat distance:	5.9 km
Total real distance:	6 km
Climbing distance:	1.3 km
Descent distance:	0.9 km
Flat distance:	3.8 km

| 3 | Question: What information can you see from the generated report?

Note: Depending on the app you use to record the GPS data, timestamps could be either in local time (that is AEST if you are in Melbourne) or sometimes it could be in UTC.

Answer: |

	From the generated GPS report, I can see the core trip stats: total time with the begining and the end. It also summarises distance by land: total real, climbing, descent, and flat, which helps me estimate effort and segment pace across different slopes. The elevation section can help me infer a net downhill path and also the elevation profile curve over distance and time. The speed panel reports min 0.2 km/h, max 36 km/h, overall average 7.3 km/h, and separate averages for climbing 8.7, descent 10.9, and flat 6.5 km/h, meaning speeds vary with slope as expected. There are two time-based charts elevation vs distance/time and speed vs distance/time which lets us spot spikes, stops, or GPS jitter. Overall, with these fields we could compute simple stats draw histograms, and even train a tiny model to predict speed from slope later.
4	Question: Discuss in a group of 3 or 4 students to identify potential risks (more than one risk) if your data, which was collected by a service provider such as Google Map, was misused without your concern. Also suggest remedies - what kind of policies the service providers should adopt to mitigate these risks. Answer: If GPS tracks are used wrongly, someone could follow or bother you by learning your daily habits, and it might show private places you go to like hospitals or churches. Also, insurance companies or bosses could use your location records to treat you unfairly or make you pay more money without asking you first. To stop this, service companies should use strong methods to hide personal information so no one can know who the data belongs to, and create clear rules about who can see your data with simple permission systems that let you say no or remove your history whenever you want.

Activity 4.2: The Ethics of Data Gathering

Digital privacy is top of mind for many Australians. With weekly data breach scandals, individuals are becoming more aware and concerned about who has their data, and more importantly, who controls how that information is gathered, used and shared. In this task, you will summarise a blog post regarding what should Australian businesses know regarding the ethics of data gathering.

Steps:

Step	Action
1	Question: Study the web material which can be found here (https://www.insideinfo.com.au/business-intelligence-and-analytics/ethics-data-gathering-what-should-australian-businesses-know). Discuss data legislation in Australia and (un)ethical use of customer data. Reflect your viewpoint. Answer: Australia's Privacy Act and data breach rules require businesses to handle personal information correctly and report data leaks. However, many companies still collect too much data or share it without proper permission. It is wrong to secretly use customer information to create profiles or sell it to other companies without telling customers, because this breaks trust and takes away people's rights. I think businesses should only collect the data they really need, clearly tell customers how their information will be used, and get clear permission before using it in new ways.

Activity 4.3: The ethical dilemma of self-driving cars

Self-driving cars are already cruising the streets today. And while these cars will ultimately be safer and cleaner than their manual counterparts, they can't completely avoid accidents altogether. In this video, you will explore and reflect on how the car should be programmed if it encounters an unavoidable accident.

Steps:

Step	Action
1	Question: Study the web material which can be found here (https://www.youtube.com/watch?v=ixIoDYVfKA0). Reflect critically the ethical considerations and discuss to what extent you agree or disagree with justification. Answer: In a self-driving car, if an accident cannot be stopped, the car should try to cause less damage. It should choose to damage things instead of hurting people. But making the car decide who lives or dies feels wrong. This might make people want to use old cars that they control themselves. I mostly agree that cars should try to save as many lives as possible. However, cars should not decide who lives or dies. Instead, they should stop quickly and call for help right away.

Activity 4.4: The ethical dilemma of abusing generative language models

The use of generative language models such as ChatGPT is increasing in our daily life. A specific question can be asked in the chat-bot command prompt which generates related answers. Students often find the chat-bot a handy tool to ask any study related questions to get a direct answer and feels reluctant to search online and compile an answer by navigating through several websites. While the use of chat-bots are useful, their improper use can limit the students ability to learn. For example, using chat-bots to generate a direct answer to parts of an assignment should be avoided considering an ethical, as well as productive point-of-view.

Steps:

Step	Action
1	Question: How you feel chat-bots (such as ChatGPT) should be used in the context of solving an assignment question? Reflect critically the ethical and learning considerations. Discuss the question in a group of 3 to 4 students and share your and some of the other students' thoughts that attracted your attention. Answer: Chat-bots like ChatGPT are good for thinking of ideas, checking grammar, or explaining things, but students should not copy and paste complete answers because this can cause plagiarism problems and stops learning. It is right to use them as writing helpers ask for summaries or explanations.