

## Revision History

Date	Version	Description	Author
13.01.2022	0.1	First draft	Thomas Huru
28.01.2+22	1.0	Final revision	Thomas Huru

## 1. Goals and Limitations

### 1.1. Orientation

Task was given as an optional in the subject “Applied Machine Learning with Project “, by Donn Alexander Morrison. This bachelor is a continuation of that project.

### 1.2 Problem description and result goals.

The goal of this bachelor project is to create an ad-block for podcasts through machine learning techniques. This is meant to explore the subject of machine learning on audio, and to review technology and techniques in the field.

### 1.3 Effect goals

As a group, we aim to deepen our knowledge of audio processing and machine learning, learn to cooperate on and develop a shared product as a group.

### 1.4 Requirements

Yet, there are no special requirements for the project, but a lot of data is required for this task, and as such we may need to invest in additional storage space for the audio files. No other notable special requirements yet.

## 2. Organization

The people involved in this project are Morten Stavik Eggen, and Thomas Christ Huru which are the researchers and developers of this project. The supervisor is Donn Alexander Morrison which works at NTNU.

## 3. Implementation

### 3.1 Main tasks

### 3.2 Milestones

28 <sup>th</sup> January?	Project plan
19 <sup>th</sup> May	Project and assignment 2
26 <sup>th</sup> May	Delivery of digital presentation

## 4. Supervision and Quality Assurance

### 4.1 Quality assurance

Code will be reviewed by both members of the group, and especially important code will also be sent to Donn for review.

There will be a focus on reproducibility in the project, so it is important that the code is clean, and our data is easily reproducible. This will be done through testing on multiple computer systems and reproducing our own results multiple times.

In the bachelor report, both members have an obligation to be clear about what research they are doing, and both members have an obligation to review each other's research.

### 4.2 Reporting

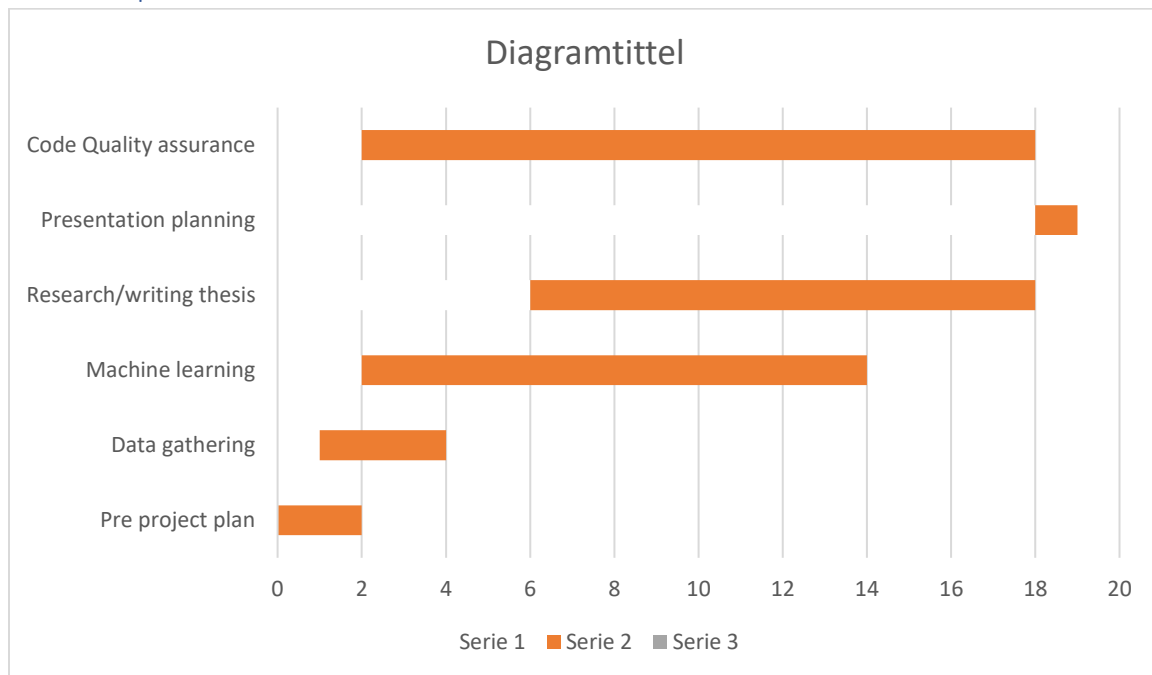
Progress and issues are discussed with Donn over either planned meetings or in mail.

## 5.0 Risk Analysis

Risiko	Possibility	Severity	Possible measures
Team member gets sick for extended period	Small	Medium	General corona safety
Training data is corrupted / lost	Small	Medium	Make sure disks are treated correctly, and possibly have a backup should the time to get the data be long.
Not able to achieve high accuracy on model	Small	Medium	
Computers get stolen / lost / stop working	Small	Small	Can loan computers from NTNU / both team members have multiple computers
Project loses proper direction	Small	Medium	Make sure everyone agrees on goals for the project, and have clear goals while working on the project
Updates in hardware / software leave the model / library unusable.	Small	Medium	Undoing updates is usually possible.

## 6.0 Attachments

## 6.1 Time plan



## 6.2 Three part agreement



Norwegian University of Science and Technology

*Approved by the Pro-Rector for Education 10 December 2020*

### STANDARD AGREEMENT

On student works carried out in cooperation with an external organization

The agreement is mandatory for student works such as master's thesis, bachelor's thesis or project assignment (hereinafter referred to as works) at NTNU that are carried out in cooperation with an external organization.

### Explanation of terms

### Copyright

Is the right of the creator of a literary, scientific or artistic work to produce copies of the work and make it available to the public. A student thesis or paper is such a work.

### Ownership of results

Means that whoever owns the results decides on these. The basic principle is that the student owns the results from their own student work. Students can also transfer their ownership to the external organization.

### Right to use results

The owner of the results can give others a right to use the results – for example, the student gives NTNU and the external organization the right to use the results from the student work in their activities.

### Project background

What the parties to the agreement bring with them into the project, that is what each party already owns or has rights to and which is used in the further development of the student's work. This may also be material to which third parties (who are not parties to the agreement) have rights.

### Delayed publication (embargo)

Means that a work will not be available to the public until a certain period has passed; for example, publication will be delayed for three years. In this case, only the supervisor at NTNU, the examiners and the external organization will have access to the student work for the first three years after the student work has been submitted.

## 1. Contracting parties

The Norwegian University of Science and Technology (NTNU) Department:
Supervisor at NTNU: email and telephone:
External organization: Contact person, email address and telephone number of the external organization:

Student: Thomas Huru Date of birth: 10.07.1998
Student: Morten Stavik Eggen Date of birth: 30.10.1993

The parties are responsible for clearing any intellectual property rights that the student, NTNU, the external organization or third party (which is not a party to the agreement) has to project background before use in connection with completion of the work. Ownership of project background must be set out in a separate annex to the agreement where this may be significant for the completion of the student work.

## 2. Execution of the work

The student is to complete: (Place an X)

A master's thesis	
A bachelor's thesis	X
A project assignment	
Another student work	

Start date: 12.01.2022
Completion date: 27.05.2022

The working title of the work is: Using Audio Machine Learning for Blocking Ads on Podcasts
---

--

---

The responsible supervisor at NTNU has the overarching academic responsibility for the design and approval of the project description and the student's learning.

### 3. Duties of the external organization

The external organization must provide a contact person who has the necessary expertise to provide the student with adequate guidance in collaboration with the supervisor at NTNU. The external contact person is specified in Section 1.

The purpose of the work is to carry out a student assignment. The work is performed as part of the programme of study. The student must not receive a salary or similar remuneration from the external organization for the student work. Expenses related to carrying out the work must be covered by the external organization. Examples of relevant expenses include travel, materials for building prototypes, purchasing of samples, tests in a laboratory, chemicals. The student must obtain clearance for coverage of expenses with the external organization in advance.

The external organization must cover the following expenses for carrying out the work:

Coverage of expenses for purposes other than those listed here is to be decided by the external organization during the work process.

### 4. The student's rights

Students hold the copyright to their works <sup>1</sup>. All results of the work, created by the student alone through their own efforts, is owned by the student with the limitations that follow from sections 5, 6 and 7 below. The right of ownership to the results is to be transferred to the external organization if Section 5 b is checked or in cases as specified in Section 6 (transfer in connection with patentable inventions).

In accordance with the Copyright Act, students always retain the moral rights to their own literary, scientific or artistic work, that is, the right to claim authorship (the right of attribution) and the right to object to any distortion or modification of a work (the right of integrity).

A student has the right to enter into a separate agreement with NTNU on publication of their work in NTNU's institutional repository on the Internet (NTNU Open). The student also

---

<sup>1</sup> See Section 1 of the Norwegian Copyright Act of 15 June 2018 [Lov om opphavsrett til åndsverk]

has the right to publish the work or parts of it in other connections if no restrictions on the right to publish have been agreed on in this agreement; see Section 8.

#### 5. Rights of the external organization

Where the work is based on or further develops materials and/or methods (project background) owned by the external organization, the project background is still owned by the external organization. If the student is to use results that include the external organization's project background, a prerequisite for this is that a separate agreement on this has been entered into between the student and the external organization.

Alternative a) (Place an X) General rule

<input type="checkbox"/>	The external organization is to have the right to use the results of the work
--------------------------	---

This means that the external organization must have the right to use the results of the work in its own activities. The right is non-exclusive.

Alternative B) (Place an X) Exception

<input type="checkbox"/>	The external organization is to have the right of ownership to the results of the task and the student's contribution to the external organization's project
--------------------------	--

Justification of the external organization's need to have ownership of the results transferred to it:

#### 6. Remuneration for patentable inventions

If the student, in connection with carrying out the work, has achieved a patentable invention, either alone or together with others, the external organization can claim transfer of the right to the invention to itself. A prerequisite for this is that exploitation of the invention falls within the external organization's sphere of activity. If so, the student is entitled to reasonable remuneration. The remuneration is to be determined in accordance with Section 7 of the Employees' Inventions Act. The provisions on deadlines in Section 7 apply correspondingly.



## 7. NTNU's rights

The submitted files of the work, together with appendices, which are necessary for assessment and archival at NTNU belong to NTNU. NTNU receives a right, free of charge, to use the results of the work, including appendices to this, and can use them for teaching and research purposes with any restrictions as set out in Section 8.

## 8. Delayed publication (embargo)

The general rule is that student works must be available to the public.

Place an X

X	The work is to be available to the public.
---	--

In special cases, the parties may agree that all or part of the work will be subject to delayed publication for a maximum of three years. If the work is exempted from publication, it will only be available to the student, external organization and supervisor during this period. The assessment committee will have access to the work in connection with assessment. The student, supervisor and examiners have a duty of confidentiality regarding content that is exempt from publication.

The work is to be subject to delayed publication for (place an X if this applies):

Place an X

Specify date

	one year	
	two years	
	three years	

The need for delayed publication is justified on the following basis:

--

If, after the work is complete, the parties agree that delayed publication is not necessary, this can be changed. If so, this must be agreed in writing.

Appendices to the student work can be exempted for more than three years at the request of the external organization. NTNU (through the department) and the student must accept this if

the external organization has objective grounds for requesting that one or more appendices be exempted. The external organization must send the request before the work is delivered.

The parts of the work that are not subject to delayed publication can be published in NTNU's institutional repository – see the last paragraph of Section 4. Even if the work is subject to delayed publication, the external organization must establish a basis for the student to use all or part of the work in connection with job applications as well as continuation in a master's or doctoral thesis.

### ***9. General provisions***

This agreement takes precedence over any other agreement(s) that have been or will be entered into by two of the parties mentioned above. If the student and the external organization are to enter into a confidentiality agreement regarding information of which the student becomes aware through the external organization, NTNU's standard template for confidentiality agreements can be used.

The external organization's own confidentiality agreement, or any confidentiality agreement that the external party has entered into in collaborative projects, can also be used provided that it does not include points in conflict with this agreement (on rights, publication, etc). However, if it emerges that there is a conflict, NTNU's standard contract on carrying out a student work must take precedence. Any agreement on confidentiality must be attached to this agreement.

Should there be any dispute relating to this agreement, efforts must be made to resolve this by negotiations. If this does not lead to a solution, the parties agree to resolution of the dispute by arbitration in accordance with Norwegian law. Any such dispute is to be decided by the chief judge (sorenskriver) at the Sør-Trøndelag District Court or whoever he/she appoints.

This agreement is signed in four copies, where each party to this agreement is to keep one copy. The agreement comes into effect when it has been signed by NTNU, represented by the Head of Department.

### **Signatures:**

Head of Department: Date:
---------------------------

Supervisor at NTNU: Date:
External organization: Date:
Student: Thomas Christ Huru Date:
Student: Morten Stavik Eggen Date: 28.01.2022

### 6.3 Work contract

# Work contract for “Machine learning for ad blocking in podcast audio”

Members: Morten Stavik Eggen, Thomas Christ Huru

## Mål (hva ønsker man å oppnå i prosjektet?)

Høyere forståelse av lydbehandling.

Praktisk erfaring på databehandling.

En adblocker for podcasts skal være implementert,

Det skal være skrevet en oppgave som omhandler maskinlæring på lyd, spesielt i kontekst av podcasts.

Det skal være gjort grundig studie av feltet for maskinlæring for lyd

## Prosedyrer (hvordan gjør man ting?)

### A. Møteinnkalling

Møteinnkalling foregår hovedsakelig over invitasjoner til teams gjennom mail.

B. *Varsling ved fravær eller andre hendelser*

Fravær meldes så fort som mulig over til andre medlem av gruppen. Er personen som må ta fravær sitt ansvar att andre person får det med seg, dermed anbefales å kontakte gjennom flere kanaler om ikke det komme respons hurtig.

Ved lengre fravær gjelder vanlige konsekvenser, diskusjon med hverandre om hvorfor fraværet opptrer, hvor konkrete steg for å endre fraværet må foretas om det er et problem. Er ikke dette mulig, må ansvarsperson kontaktes for å melde om fraværet. Slikt gjelder spesielt med mer alvorlig sykdom.

C. *Dokumenthåndtering*

Dokumenter lagres i google drive. Ellers lagres kode på github.

D. *Innleveringer av gruppearbeider*

Begge gruppemedlemmene må lese gjennom gruppearbeid, og begge må godkjenne det/ eventuelt ta opp mangler i arbeidet. Dette bør gjøres i god nok tid til at endringer kan inntre før innleveringsfristen.

## Interaksjon (Hvordan opptrer man sammen?)

A. *Oppmøte og forberedelse*

Møt opp på avtalt tidspunkt, og les gjennom møteplanen før oppmøte. Møteplan skal sendes senest dagen før møtet, på mail til alle gruppemedlemmer tillegg til rådgiver for gruppen.

B. *Tilstedeværelse og engasjement*

Ikke lov med unntak av avtalte pauser. Arbeid foregår enten fysisk eller over nettet, er fysisk avtalt har begge medlemmer ansvar for å melde om de ikke kan møte opp likevel, i god tid.

C. *Hvordan støtte hverandre*

Skape motivasjon gjennom samarbeid og interesse i den andre sitt arbeid. Hvis personer sliter med å finne arbeid eller motivasjon, er det en prioritet å få personen på rett bane igjen.

D. *Uenighet, avtalebrudd*

Grunnet at gruppen kun består av to medlemmer, må seriøse uenigheter tas opp med en tredjepart, personer som Grethe eller Donn avhengig av problem. Gruppen er ansvarlig for å prøve å forhindre slike situasjoner, og forventes å kunne løse uenigheter sammen.

Hvis en tredjepart kontakter og gir sin mening skal den følges. Dette kan unntas om begge gruppemedlemmer imidlertid skifter mening som følge av tiden mellom responsen eller responsen selv.

Signatur:

Morten Stavik Eggen

Thomas Christ Huru