Team SWEg API 1.0

[Base URL: /api]

API endpoints for a microservice that predicts potential applicant success using machine learning.

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models API endpoints to manage machine learning models

GET /models Gets a list of all the models

Parameters Try it out

No parameters

Responses Response content type: application/json

Code	Description
200	Success **Example Value** | Model

```
{
  {
    "model_class": "logistic",
    "learning_rate": 0,
    "k": 1
  }
]
```

POST /models Creates and trains a model with given model class and hyperparameters

Parameters Try it out

Name	Description
payload * required object (Body)	**Example Value** | Model `{ "model_class": "logistic", "learning_rate": 0, "k": 1 }` Parameter content type: application/json

Responses Response content type: application/json

Code	Description
201	Success **Example Value** | Model `{ "model_id": 1, "train_acc": 1, "valid_acc": 1 }`
400	Invalid input

DELETE /models/{model_id} Deletes a model with a given ID

Parameters Try it out

Name	Description
model_id * required integer (path)	The model ID model_id

Responses Response content type: application/json

Code	Description
204	Success
400	Invalid input
404	Model does not exist

GET /models/{model_id} Gets a model with a given ID

Parameters Try it out

Name	Description
model_id * required integer (path)	The model ID model_id

Responses Response content type: application/json

Code	Description
200	Success **Example Value** | Model `{ "model_class": "logistic", "learning_rate": 0, "k": 1 }`
400	Invalid input
404	Model does not exist

POST /models/{model_id}/predict Predicts the success of an applicant using a given model

Parameters Try it out

Name	Description
payload * required object (Body)	**Example Value** | Model `{ "school": true, "sex": true, "age": 1, "address": true, "family_size": true, "p_status": true, "mother_edu": 1, "father_edu": 1, "mother_job": 1, "father_job": 1, "reason": 1, "guardian": 1, "travel_time": 1, "study_time": 1, "failures": 0, "school_support": true, "family_support": true, "paid": true, "activities": true, "nursery": true, "higher": true,` Parameter content type: application/json
model_id * required integer (path)	The model ID model_id

Responses Response content type: application/json

Code	Description
200	Success **Example Value** | Model `{ "model_id": 1, "success": true }`
400	Invalid input
404	Model does not exist

Models

ModelMetadata {

```
model_class*        string
                    title: Model class
                    example: logistic

                    The name of the model class

                    Enum:
                      [ Array [ 3 ] ]
learning_rate*      number
                    title: Predicted success

                    The success of the given applicant predicted by the model

k                   integer
                    title: K-fold cross validation
                    minimum: 1

                    Value used in K-fold cross validation
}
```

TrainResult {

```
model_id*           integer
                    title: Model ID
                    minimum: 1

                    The ID of the created model

train_acc*          number
                    title: Training accuracy
                    minimum: 0
                    maximum: 1

                    Model accuracy tested on training set

valid_acc           number
                    title: Validation accuracy
                    minimum: 0
                    maximum: 1

                    Model accuracy tested on validation set
}
```

Applicant {

```
school              boolean
                    title: School

                    Student's school (true - Gabriel Pereira, false - Mousinho da Silveira)

sex                 boolean
                    title: Sex

                    Student's sex (true - female, false - male)

age                 integer
                    title: Age
                    minimum: 15
                    maximum: 22

                    Student's age

address             boolean
                    title: Address

                    Student's home address type (true - urban, false - rural)

family_size         boolean
                    title: Family size

                    Family size (true - <=3, false - >3)

p_status            boolean
                    title: P status

                    Parent's cohabitation status (true - living together, false - apart)

mother_edu          integer
                    title: Mother's education
                    minimum: 0
                    maximum: 4

                    Mother's education level (0 - none, 1 - 4th grade, 2 - 5-9th grade, 3 - secondary, 4 - higher)

father_edu          integer
                    title: Father's education
                    minimum: 0
                    maximum: 4

                    Father's education level (0 - none, 1 - 4th grade, 2 - 5-9th grade, 3 - secondary, 4 - higher)

mother_job          integer
                    title: Mother's job
                    minimum: 0
                    maximum: 4

                    Mother's job (0 - teacher, 1 - health-related, 2 - civil services, 3 - at home, 4 - other)

father_job          integer
                    title: Father's job
                    minimum: 0
                    maximum: 4

                    Father's job (0 - teacher, 1 - health-related, 2 - civil services, 3 - at home, 4 - other)

reason              integer
                    title: Reason
                    minimum: 0
                    maximum: 3

                    Reason to choose this school (0 - close to home, 1 - school reputation, 2 - course preference, 3 - other)

guardian            integer
                    title: Guardian
                    minimum: 0
                    maximum: 2

                    Student's guardian (0 - mother, 1 - father, 2 - other)

travel_time         integer
                    title: Travel time
                    minimum: 0
                    maximum: 3

                    Home to school travel time (0 - <15 min, 1 - 15-30 min, 2 - 30-60 min, 3 - >60 min)

study_time          integer
                    title: Study time
                    minimum: 0
                    maximum: 3

                    Weekly study time (0 - <2 hrs, 1 - 2-5 hrs, 2 - 5-10 hrs, 3 - >10 hrs)

failures            integer
                    title: Failures
                    minimum: 1
                    maximum: 4

                    Number of past class failures

school_support      boolean
                    title: School support

                    Extra educational support (true - yes, false - no)

family_support      boolean
                    title: Family support

                    Family educational support (true - yes, false - no)

paid                boolean
                    title: Paid

                    Extra paid classes within the course subject (true - yes, false - no)

activities          boolean
                    title: Activities

                    Participated in extra-curricular activities (true - yes, false - no)

nursery             boolean
                    title: Nursery

                    Attended nursery school (true - yes, false - no)

higher              boolean
                    title: Higher

                    Wants to take higher education (true - yes, false - no)

internet            boolean
                    title: Internet

                    Internet access at home (true - yes, false - no)

Romantic            boolean
                    title: Romantic

                    With a romantic relationship (true - yes, false - no)
```

```
    family_rel          integer
                        title: Family relationship
                        minimum: 1
                        maximum: 5

                        Quality of family relationship

    free_time           integer
                        title: Free time
                        minimum: 1
                        maximum: 5

                        Free time after school

    going_out           integer
                        title: Going out amount
                        minimum: 1
                        maximum: 5

                        Going out with friends

    workday_alcohol     integer
                        title: Alcohol (workday)
                        minimum: 1
                        maximum: 5

                        Workday alcohol consumption

    weekend_alcohol     integer
                        title: Alcohol (weekend)
                        minimum: 1
                        maximum: 5

                        Weekend alcohol consumption

    health              integer
                        title: Health
                        minimum: 1
                        maximum: 5

                        Current health status

    absences            integer
                        title: Absences
                        minimum: 0
                        maximum: 93

                        Number of school absences


}
```

PredictionResult {

```
    model_id*           integer
                        title: Model ID
                        minimum: 1

                        The ID of the model used to make prediction

    success*            boolean
                        title: Predicted success

                        The success of the given applicant predicted by the model


}
```