Track patient recovery in real-time by processing streaming data

BIOMEDICAL DATA DESIGN

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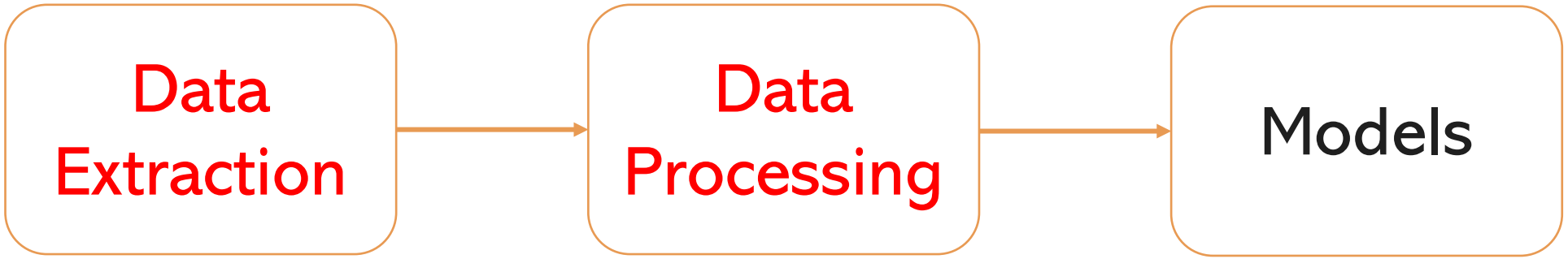
01

Data processing

02

Our progress



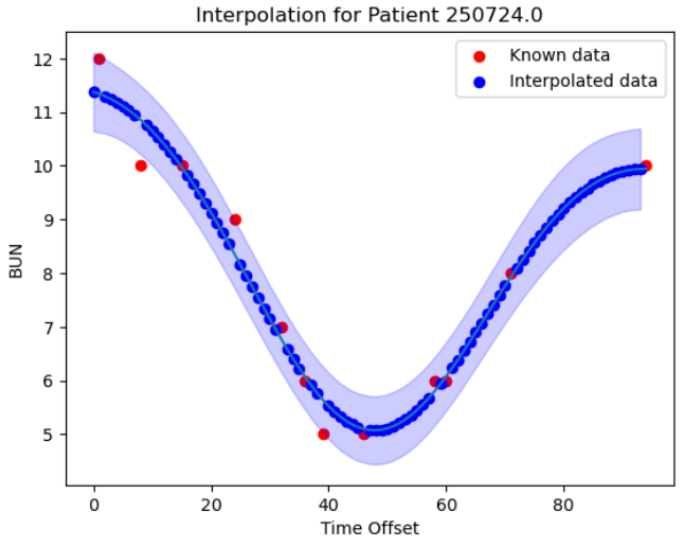
02

Aligning data

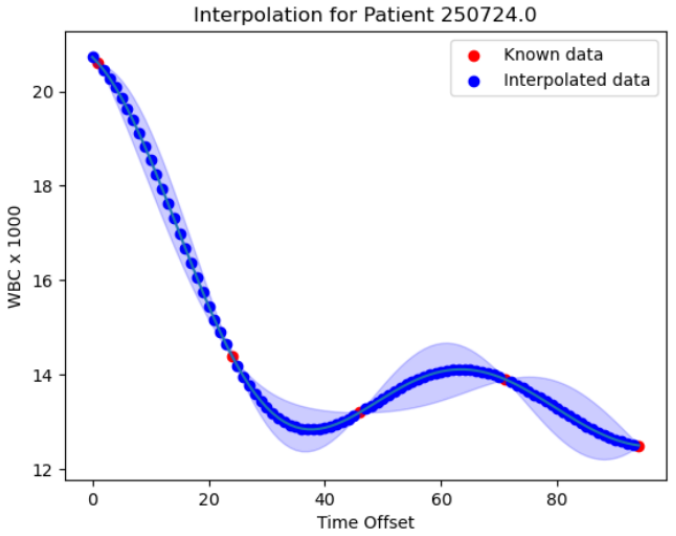
		Glasgow coma score	Nursecharting
Systolic blood pressure（mmHg）	mmHg	Noninvasivesystolic	Avtalperiod
	mmHg	Non-Invasive BP Systolic	Nursecharting
	mmHg	Invasive BP Systolic	Nursecharting
	mmHg	Systemicsystolic	Vitalperiod
		Pasystolic	Vitalperiod
Heart rate		Heart Rate	Nursecharting
Body temperature（⩾39°C (102.2°F)）	°C	temperature	Vitalperiod
	°C	Temperature(C)	Nursecharting
	°F	Temperature (F)	Nursecharting
		Temperature Location	Nursecharting
pao2/fio2 ratio（mm Hg/%）	%	FiO2	lab
	mmHg	paO2	lab
		SVO2	Nursecharting
		O2 Saturation	Nursecharting
	%	FiO2	respiratoryCharting
	%	FiO2(%)	respiratoryCharting
Urine output（mL/day）	mL/day	Outputtotal	IntakeOutput
		intakeoutputoffset	IntakeOutput
Serum urea nitrogen level（mg/dL）	mg/dL	BUN	lab
White blood cells count（x 10³/mm³）	K/mcL	WBC x 1000	lab
Serum bicarbonate level（mEq/L）	mmol/L	bicarbonate	lab
Sodium level（mEq/L or mmol/L）	mmol/L	sodium	lab
Potassium level（mEq/L）	mmol/L	potassium	lab
Bilirubin level（mg/dL）	mg/dL	total bilirubin	lab

```
def align_data(patient_batch, patient_offset, data, kernel='C(1.0) * RBF(10) + WhiteKernel(noise_level=1, noise_level_bounds=(1e-10, 1e5))'):
    """
    Summary: align data and interpolate missing values

    Args:
        patient_batch: the list of wanted patient id, used to split data
        patient_offset: the dataframe of patient offset data, including patientunitstayid, unitdischargeoffset
        data: the dataframe of data, including patientunitstayid, observationoffset, value
        kernel: the self-defined kernel function for Gaussian Process Regressor

    Returns:
        data_full: the dataframe of aligned and interpolated data, including patientunitstayid, observationoffset, value
        data_full_index: the series of the index of the first occurrence of each patient
    """
```

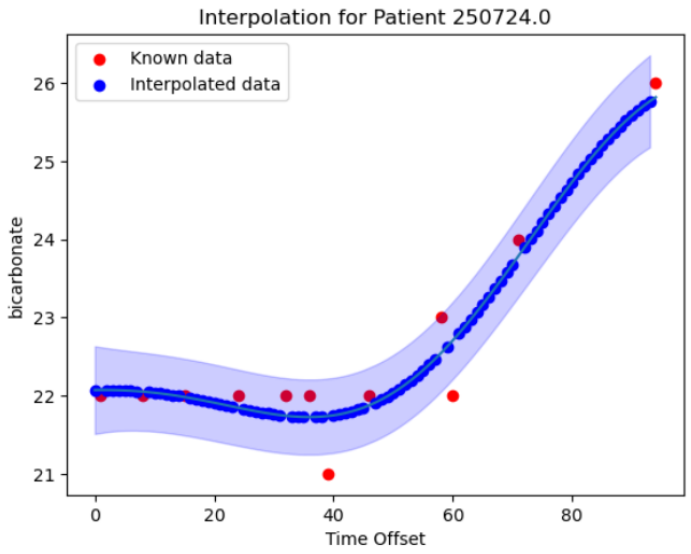
02 Aligning data



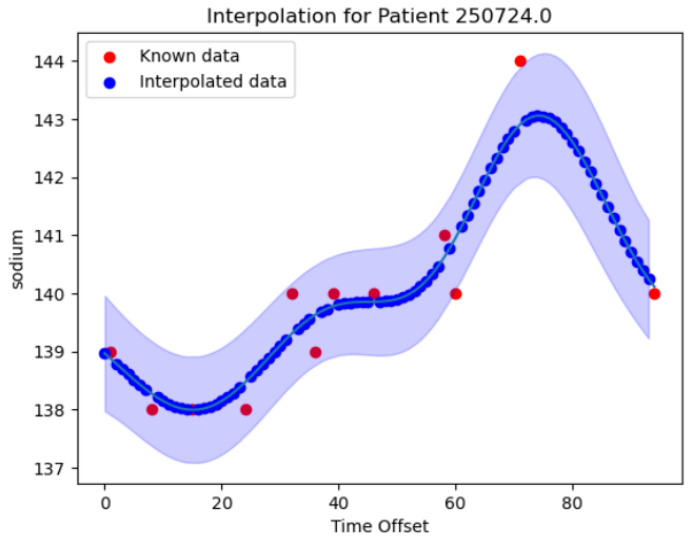
BUN



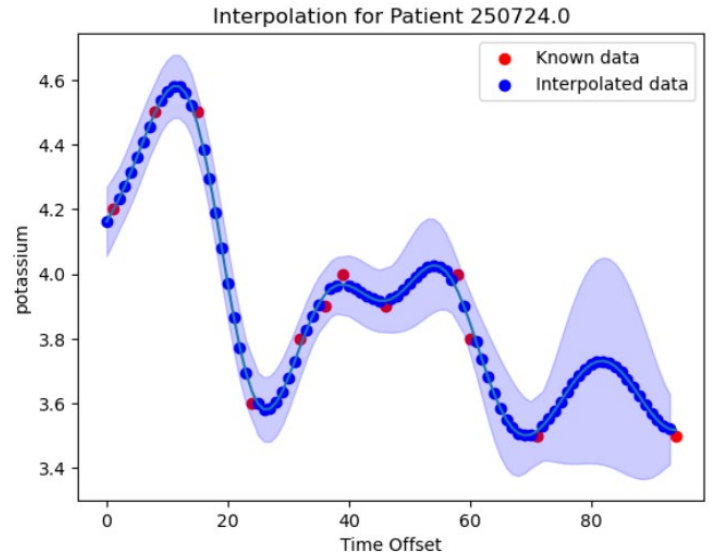
WBC



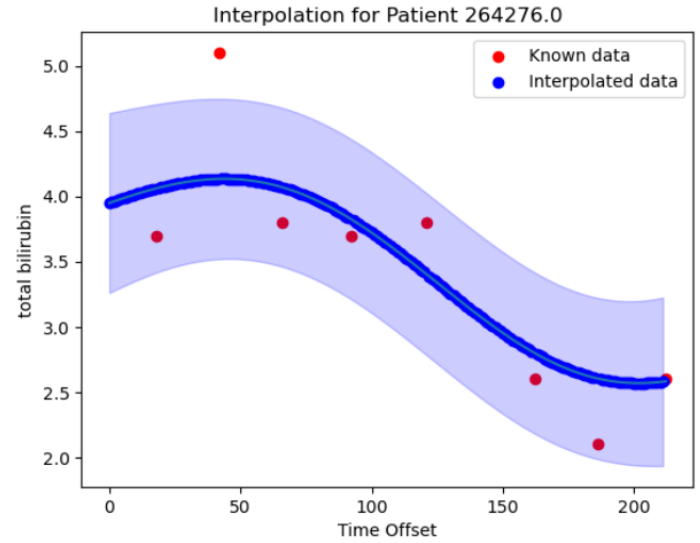
Bicarbonate



Sodium

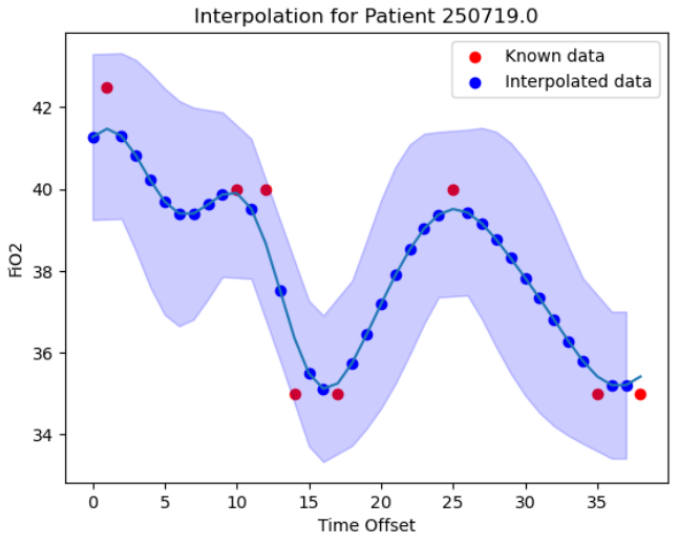


Potassium

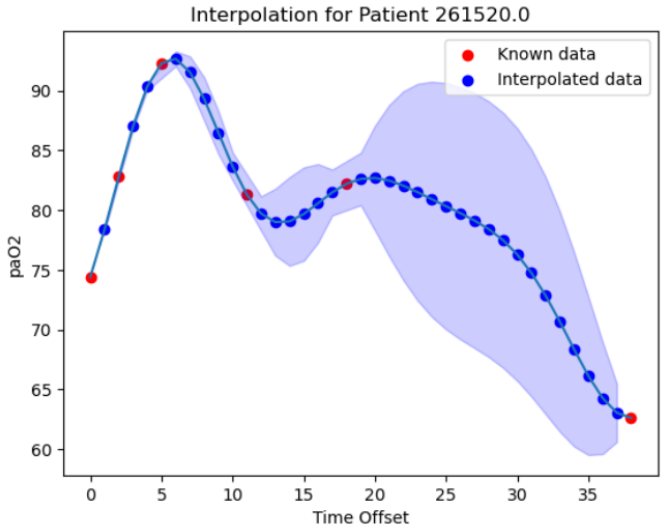


Bilirubin

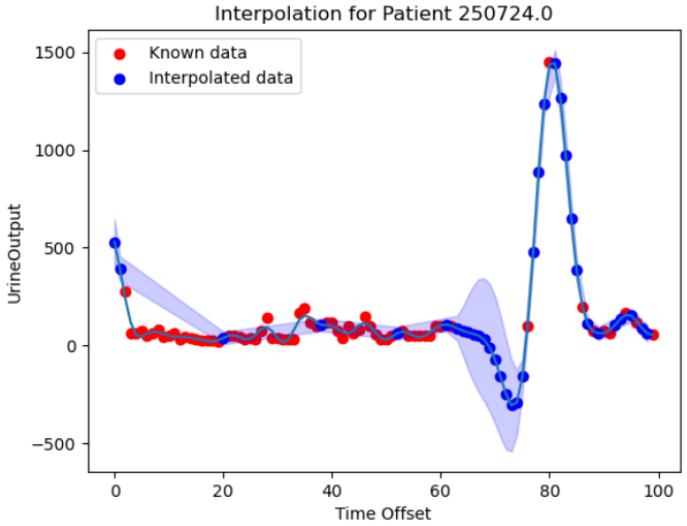
02 Aligning data



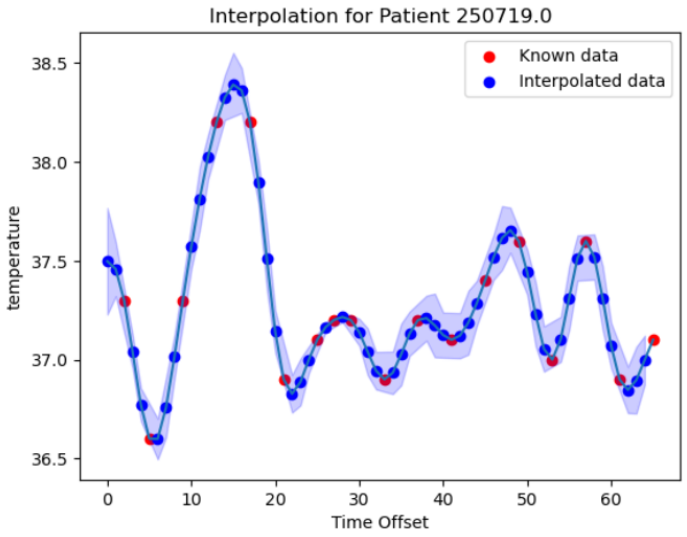
FiO2



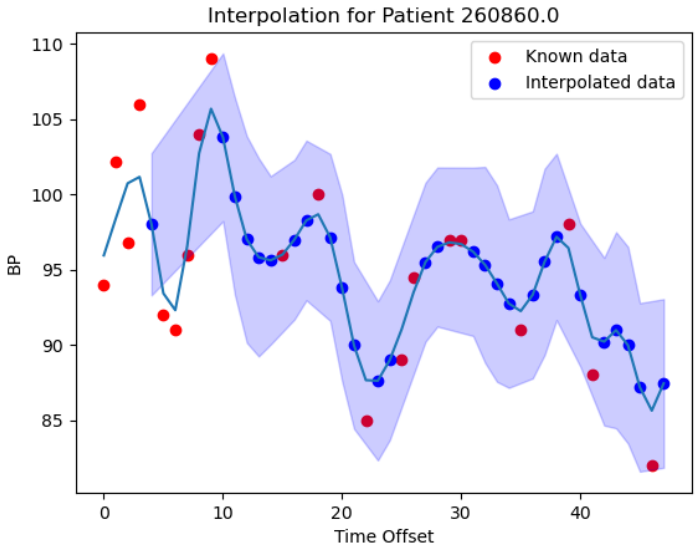
PaO2



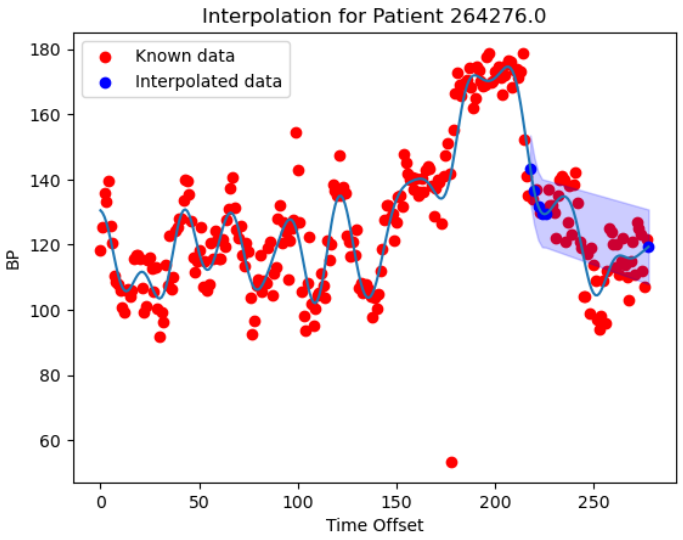
Urine



Temperature



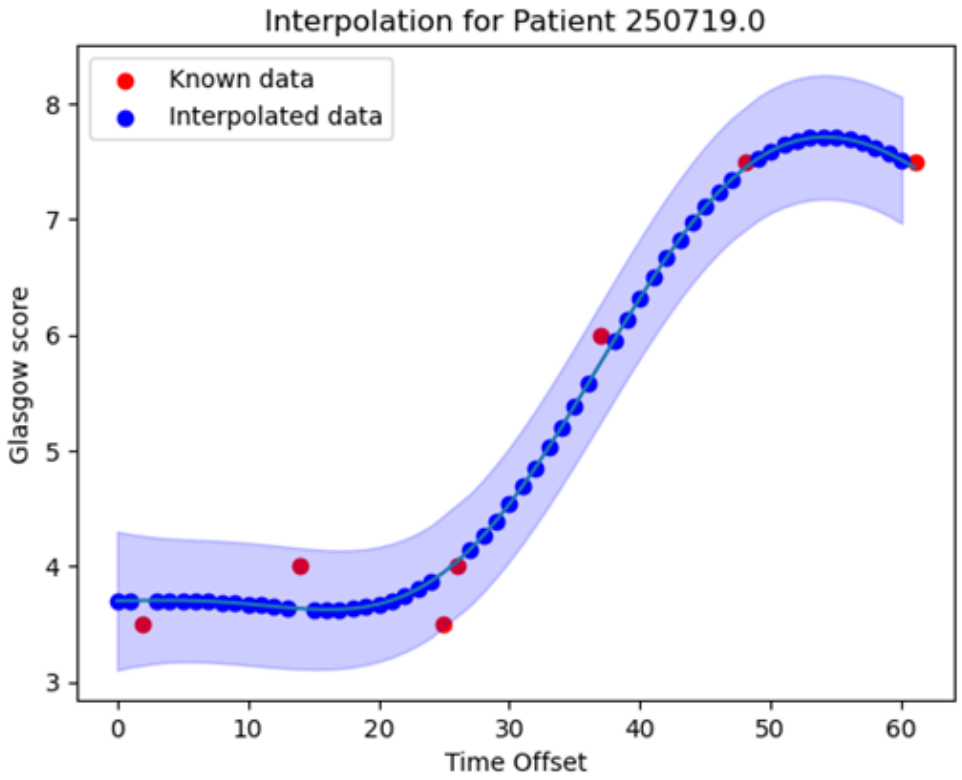
Blood pressure



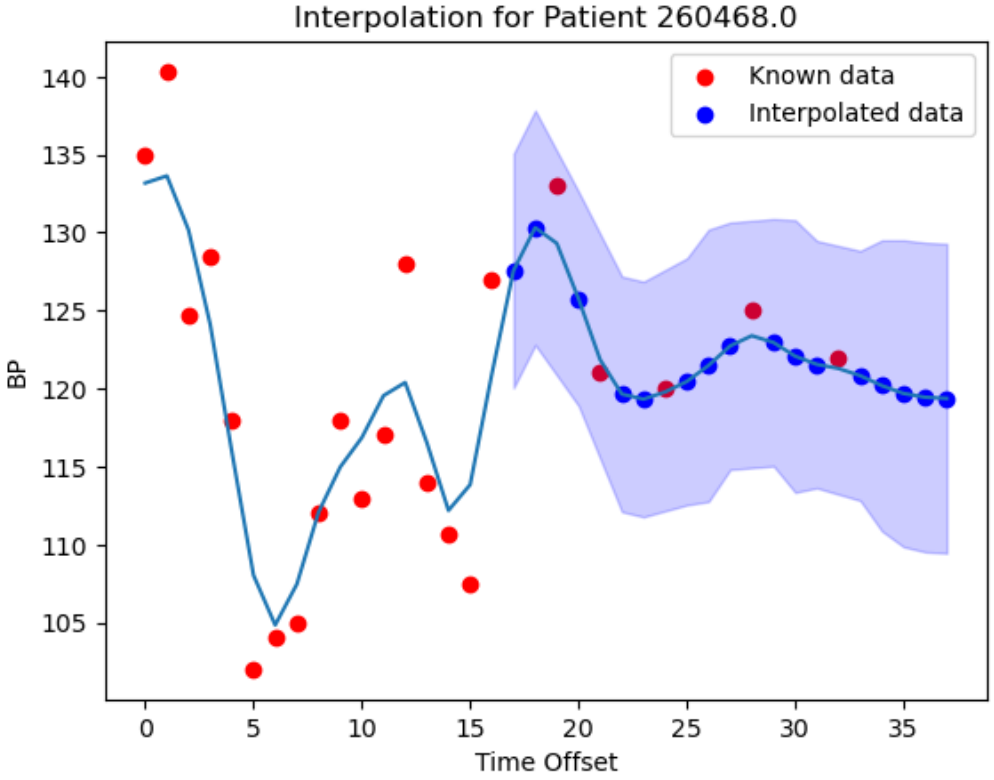
Blood pressure

02

Aligning data

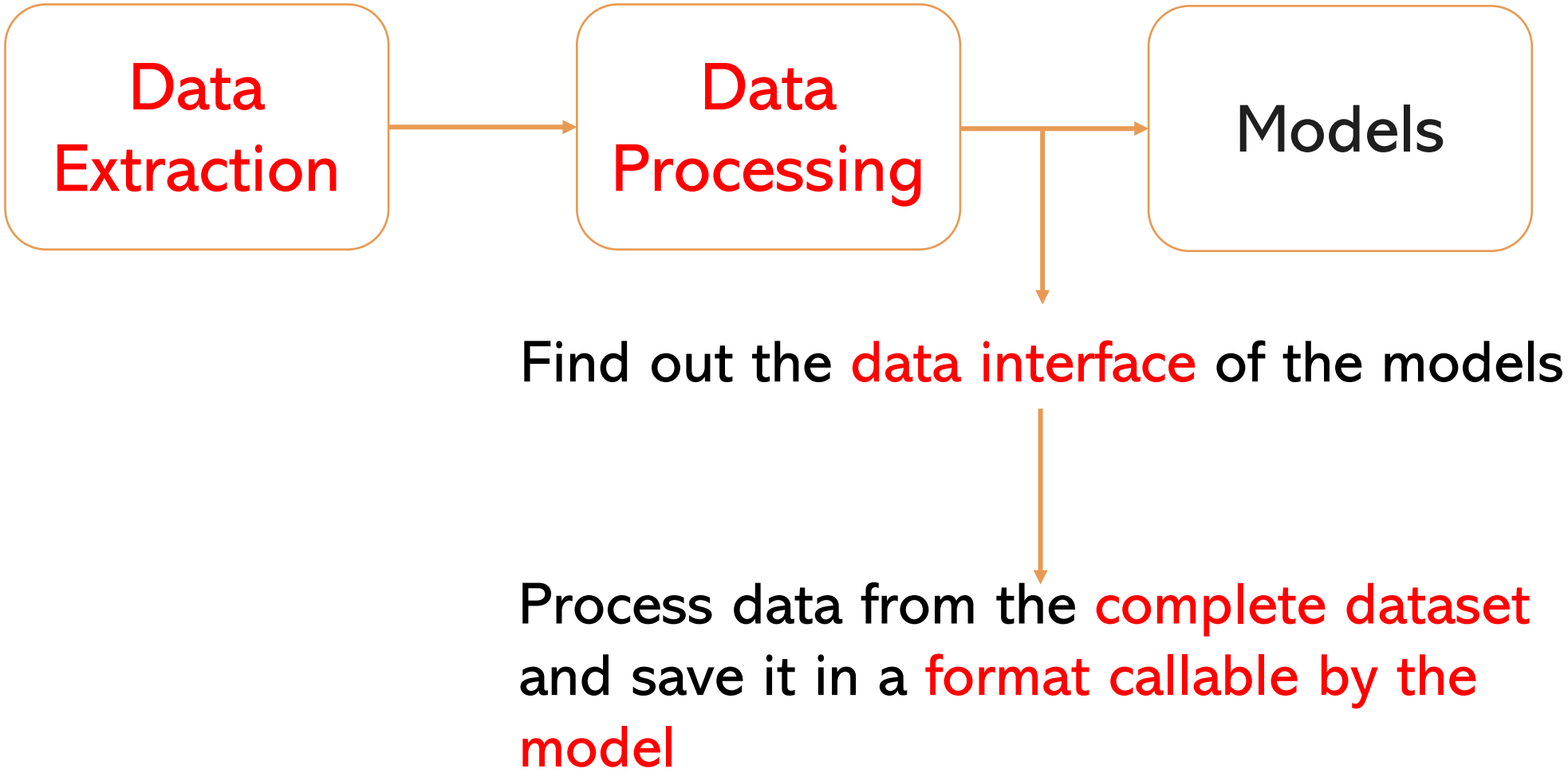


Glasgow



Heartrate

02 Our progress



Thank you