Machine Learning - 1100-ML0ENG (Ćwiczenia informatyczne Z-23/24)

What is ensemble learning?

Example 1

We are trying to decide on a place where we would like to go in the summer. Typically, if we are planning for a trip, we are going to ask for the suggestions. That is, these suggestions might come from our family, websites, friends, and travel agencies, and then we have to decide on the basis of a good experience that we had in the past.

- **Family**: Let's say that whenever we have consulted a family member and listened to them, there has been a 60% chance that they were proven right and we ended up having a good experience on the trip.
- **Friends:** Similarly, if we listen to our friends, they suggest places where we might have a good experience. In these instances, a good experience occurred in 50% of cases.
- **Travel websites:** Travel websites are another source where we can get loads of information regarding where to visit. If we choose to take their advice, there's a 35% chance that they were right and we had a good experience.
- **Travel agencies:** Another piece of advice and information might flow from travel agencies if we go and check with them first. Based on our past experiences, we
- saw that they were right in 45% of cases.

so **bad** cases are

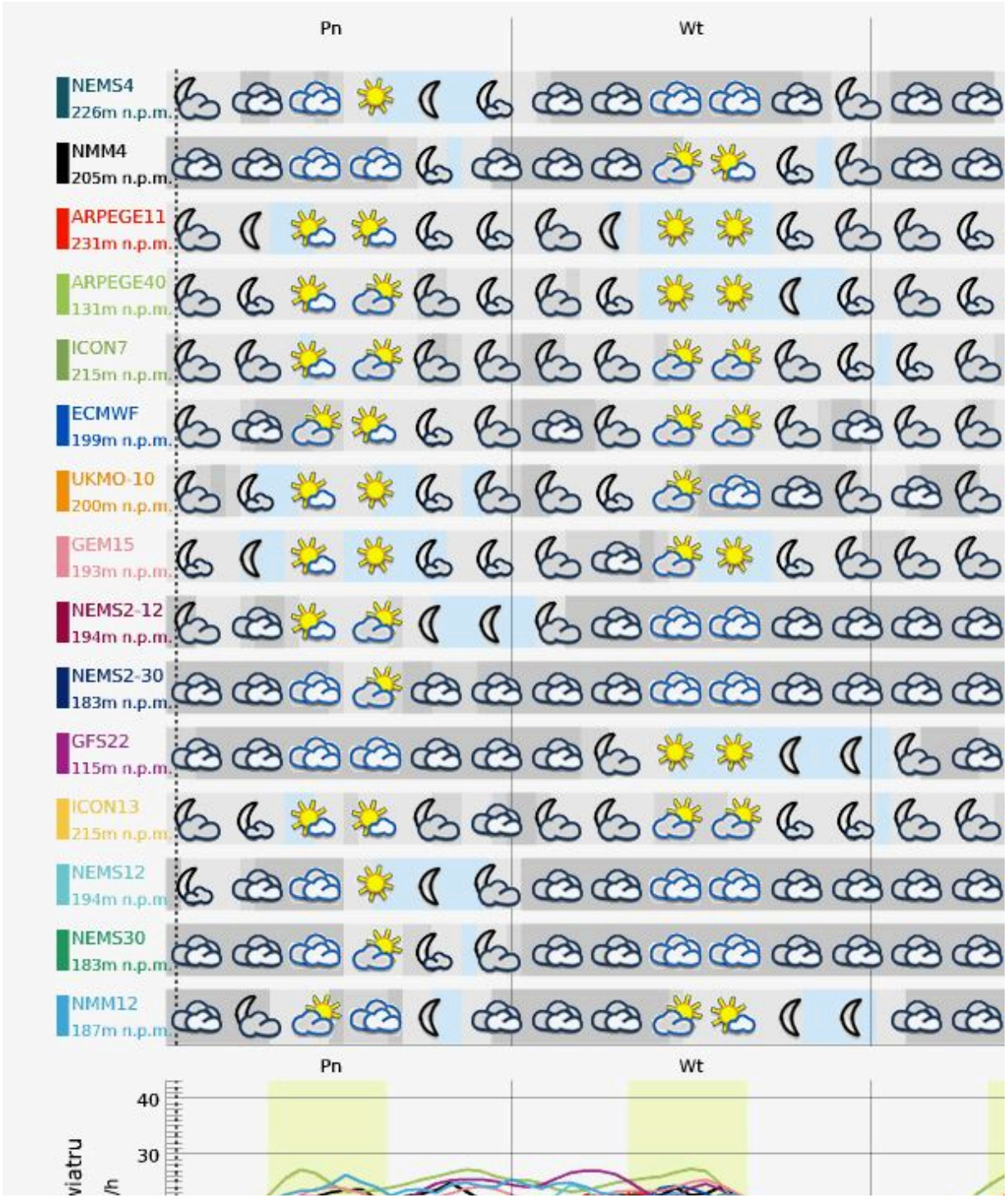
```
40%*50%*65%*55%=0,0715
```

If we combine these results, the accuracy `1-0,0715=0,9285` is close to 92%.

Example 2

Let's look at the weather forecast for Łódź, based on esemble models.

https://www.meteoblue.com/en/weather/forecast/multimodel/%c5%81%c3%b3d%c5%ba_poland_3093133


Pn
Wt
NEMS4
226m n.p.m.
NMM4
205m n.p.m.
ARPEGE11
231m n.p.m.
ARPEGE40
131m n.p.m.
ICON7
215m n.p.m.
ECMWF
199m n.p.m.
UKMO-10
200m n.p.m.
GEM15
193m n.p.m.
NEMS2-12
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NEMS2-30
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GFS22
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ICON13
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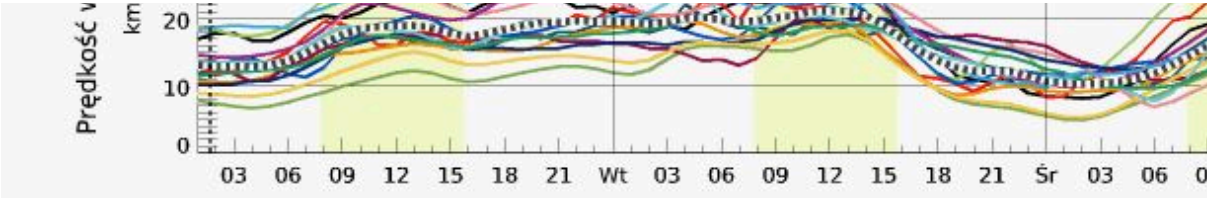
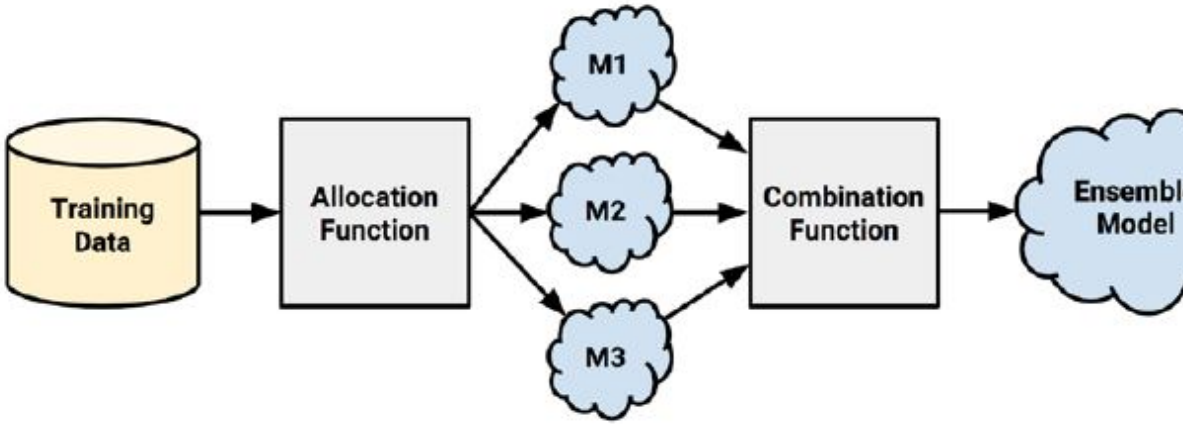


Ensemble methods use multiple learning algorithms to obtain better answer than could be obtained from any of the constituent learning algorithms alone.

All the ensemble methods are based on the idea that, by combining multiple weaker learners, a stronger learner is created.

The various ensemble methods can be distinguished, in large part, by the answers to these two questions:

1. how are the weak learning models chosen and/or constructed?
2. how are the weak learner's predictions combined to make a single final prediction?



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Na platformie jest wykorzystywana metoda logowania za pośrednictwem Centralnego Systemu Logowania.

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