Modeling Bends in Popular Music Guitar Tablatures

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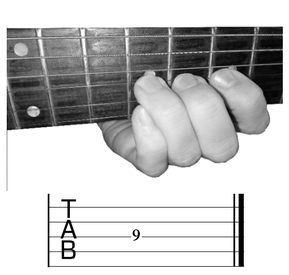
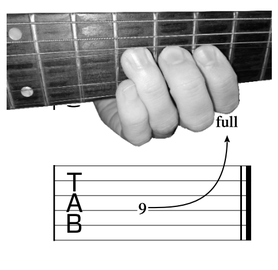
Objective

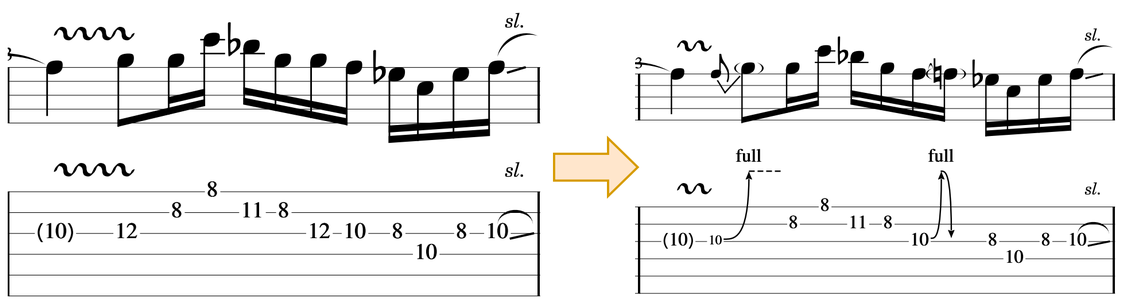


A Bend is a technique that consists in bending a string to change its tension, thus changing the pitch of the note played.



Identify most likely candidates for bends

- *To make guitar arrangements more idiomatic;*
- *To study guitar practice...*



∅ The string is not bent;

↑ The string is bent, the pitch goes up;

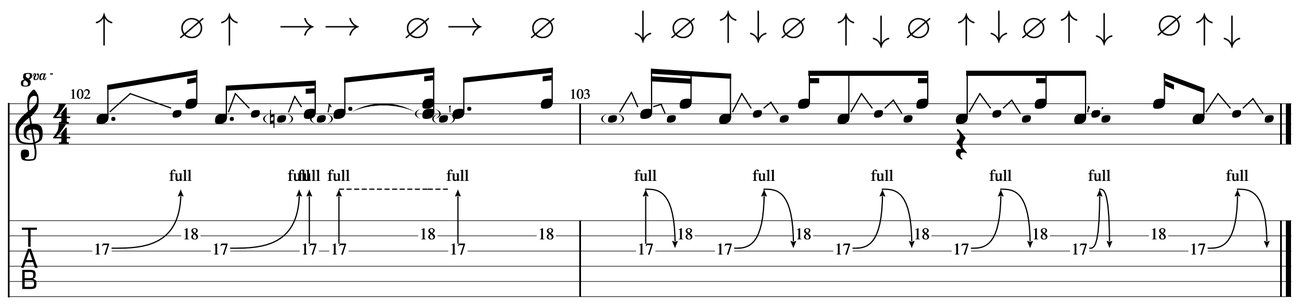
→ The string was bent previously and is plucked again in that state;

↓ The string was bent and is released, the pitch goes down.

Deriving a *bend-less* tablature

Label	*Replacement pitch*
∅ or ↓	Unchanged pitch
↑ or →	Pitch + Bend Amplitude

Representations

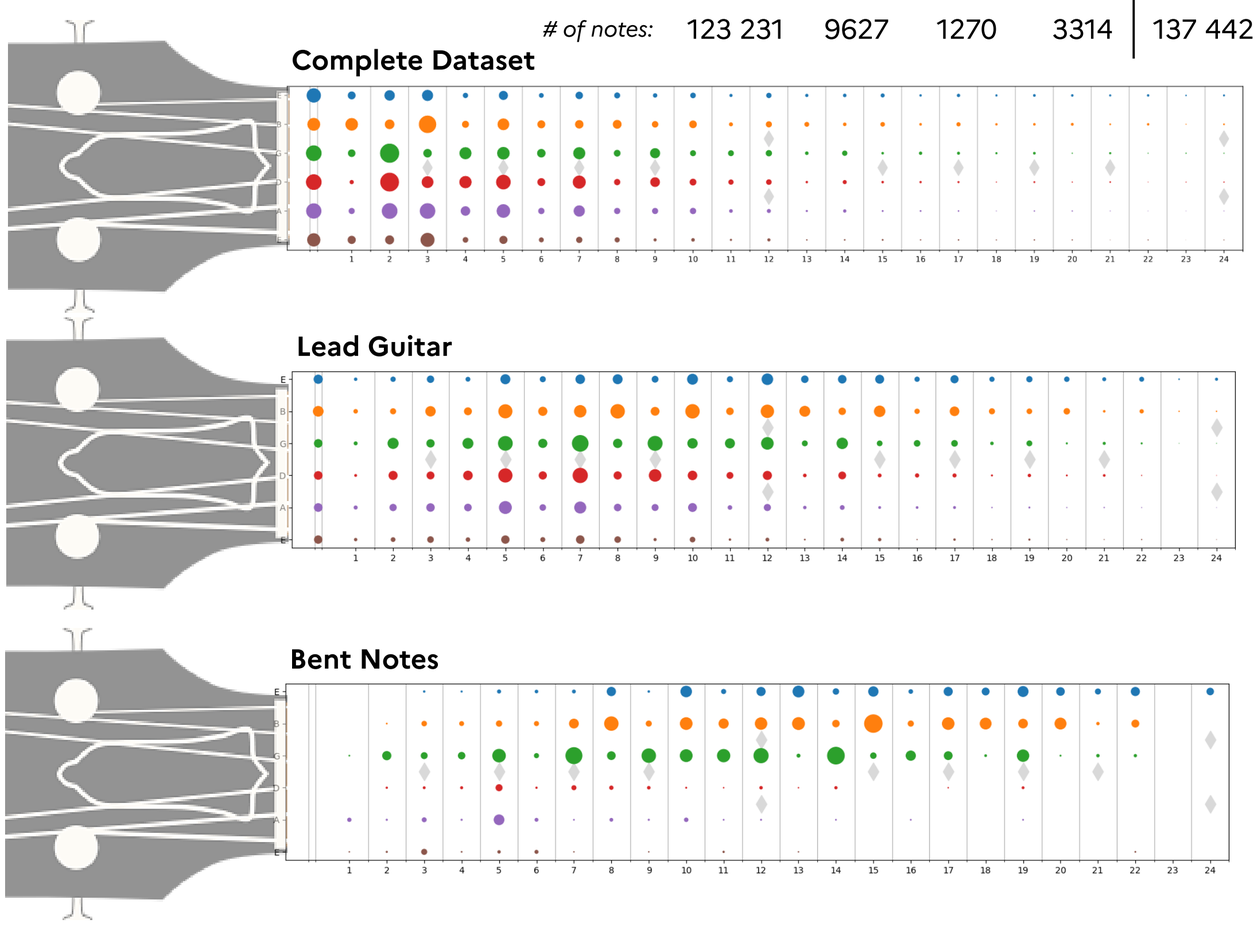


Dataset

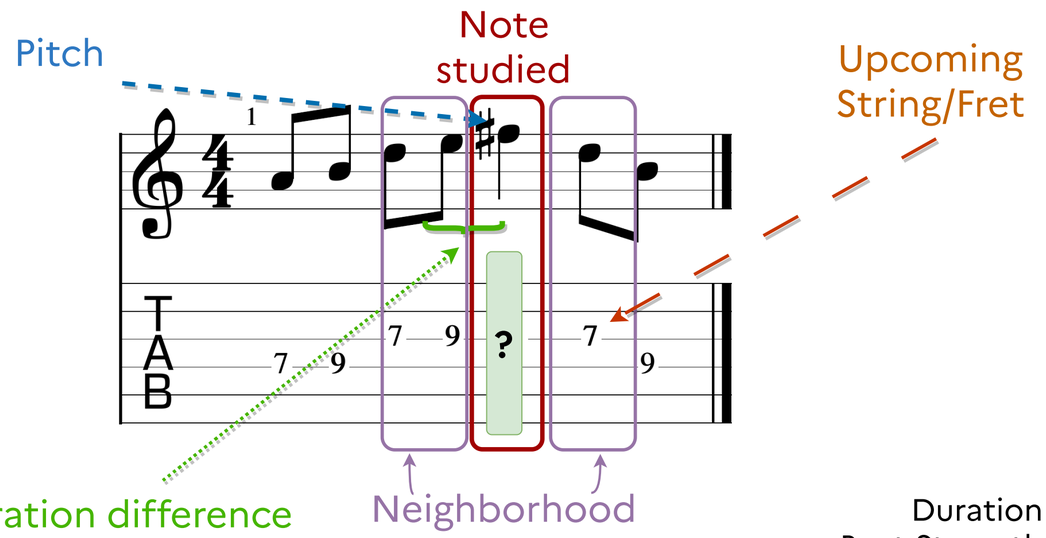
2247 guitar tablatures from the *MySongBook* database in **GuitarPro** format (pop, rock, blues...)

932 **Lead Guitar** tracks

	∅	↑	→	↓	Total
# of notes:	123 231	9627	1270	3314	137 442



Features



Feature	Importance
Pitch	0.20
Pitch jump$^{(n+1)}$	0.17
Pitch jump$^{(n-1)}$	0.16
Duration	0.14
Same dur. as previous	0.07
Fret jump$^{(n-2)}$	0.07
String$^{(n+1)}$	0.05
Pitch$^{(n+1)}$	0.05

Temporal
- Duration
- Beat Strength
- Longer than previous
- Shorter than previous
- Same duration as previous

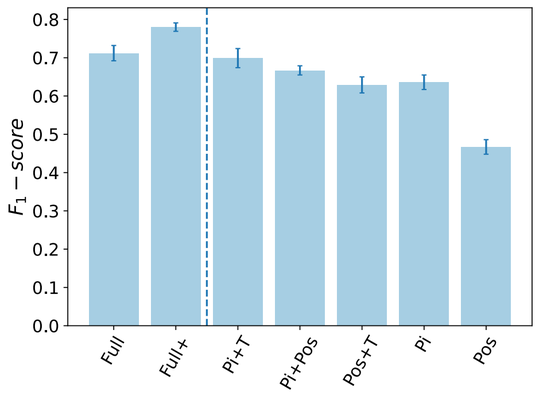
Pitch
- Number of notes
- Pitch$^{(j)}$
- Pitch jump$^{(n\pm k)}$
- Accidentals
- Pitch-class w.r.t scale root

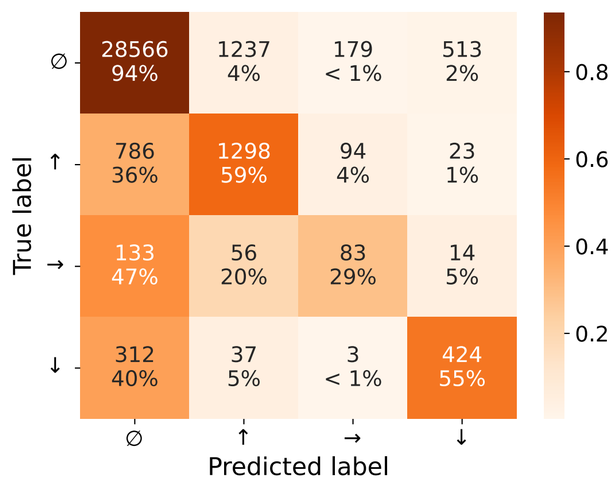
Position
- Fret$^{(n\pm k)}$
- String$^{(n\pm k)}$
- Fret jump$^{(n\pm 2)}$
- String jump$^{(n\pm 2)}$

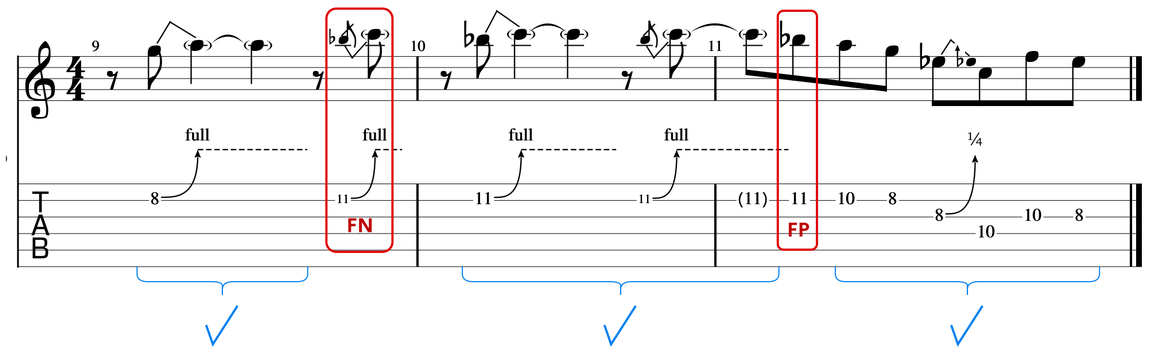
Predictions

Lightweight model that makes explainable predictions

59% of True Positives
F_1-score = 0.71







Perspectives

Extend to other techniques such as Hammer-on, Pull-off, Slides...

Study bend usage consistency across genres and artists

Code Repository

Université de Lille

CRIStAL Centre de Recherche en Informatique, Signal et Automatique de Lille

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